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CENTRAL
AND
SOUTH AMERICA

VOL. II
CENTRAL AMERICA AND WEST INDIES

BY
A. H. KEANE, F.R.G.S.
AUTHOR OF 'ASIA' AND 'AFRICA' IN THE SAME SERIES; 'ETHNOLOGY'; 'MAN PAST AND PRESENT'; 'THE GOLD OF OPHIR'; ETC.

EDITED BY
SIR CLEMENTS MARKHAM, K.C.B., F.R.S.
PRESIDENT OF THE ROYAL GEOGRAPHICAL AND HAKLUYT SOCIETIES

MAPS AND ILLUSTRATIONS

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PREFACE

In the new issue of this series the single volume originally devoted to Central America, the West Indies, and South America is replaced by two, each somewhat larger than their predecessor. The very ample additional space thus secured has been found no more than sufficient to embody the more important results of the numerous scientific expeditions made to almost every part of Latin America during the last three decades by Whymper, Conway, Fitzgerald, Crevaux, Thouar, im Thurn, Rodway, Ehrenreich, von den Steinen, Reiss, Church, Stübel, Ball, Brigham, Hill, Romero, Thompson, Seler, McGee, Moreno, Mercer, Stoll, Uhle, and many other distinguished geographers, archæologists, naturalists, and anthropologists. Many of the discoveries were of a fundamental character, profoundly modifying the views hitherto prevailing on such questions as the tectonic constitution, both of Central and South America, the West Indian orographic systems, the distribution of plants and animals over the whole area, the cradle and primitive migrations of Caribs and Arawaks; the ethnical relations of Toltecs, Aztecs,

and Mayas, of Quichuas (Peruvians) and Aymaras (Bolivians), the origin of the marvellous Tiahuanaco monuments, and of other remains of native American culture. Attention has also been claimed by the recent political changes in the West Indies, by frontier questions, as between British Guiana and Venezuela, between France and Brazil, and between Chili and Argentina, by inter-oceanic ship-canal projects, by transcontinental railway schemes, and by the altered economic conditions, especially in Mexico, Chili, Brazil, and Argentina. All these transformations called for adequate treatment, if only to show that in the New World, material and moral progress is no longer confined to "Anglo-Saxon America," and that henceforth the Hispano-Lusitanian commonwealths enter into the comity of the other cultured nations on a footing of absolute equality and independence.

In distributing the subject matter over these two volumes, it has been found convenient to deviate somewhat from the usual arrangement. Thus the European colonies in South America—British, Dutch, and French Guiana—have been reserved for the present volume on Central America and the West Indies, with which they have always been popularly associated as well as intimately connected in their history, traditions, commercial and ethnical relations.

The publisher is indebted to Mr. and Mrs. Maudslay

for permission, conveyed through their publisher, Mr. Murray, to reproduce four of the illustrations from *A Glimpse of Guatemala;* to Mr. Everard im Thurn, C.B., C.M.G., for the very interesting series of views in Guiana, with the exception of the group of Macusi, which is from a photograph by Mr. Burke, kindly supplied by Dr. E. D. Rudland of New Amsterdam. The views of Mount Misery, St. Kitts; Market Place, Roseau; and The Pitons of St. Lucia, are from negatives by Mr. F. J. Wootton Isaacson, and that of St. Pierre, Martinique, by Mr. F. A. A. Simons. Most of the Mexican views are reproduced by arrangement with Mr. O. H. Howarth; those of Guadalajara and Zacatecas, and the views in Trinidad and Barbados, were supplied by Mr. N. P. Edwards; and the illustrations to the chapter on Hispaniola are reproduced from *Where Black rules White*, by permission of the author, Mr. Hesketh Pritchard.

A. H. KEANE.

ARÁM-GÁH
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CENTRAL AMERICA

AND

WEST INDIES

CHAPTER I

GENERAL SURVEY—PHYSICAL AND BIOLOGICAL RELATIONS

Former Distribution of Land and Water in the Isthmian Region—The Isthmian Archipelago—Igneous Agencies in Central America—Geological History of the West Indies—Igneous and Marine Formations—The "American Mediterranean"—Gulf of Mexico and Caribbean Sea—The Gulf Stream—Climate of the Antilles and Central America—Flora and Fauna.

Former Distribution of Land and Water in the Isthmian Region

In the volume of this series devoted to South America it is shown that, from the geographical stand-point, that continent terminates northwards at the Atrato-San Juan depression, through which the Atlantic communicated at one time with the Pacific. By the establishment of this fact Humboldt's magnificent but somewhat hasty generalisation regarding the geological continuity of the continental axis from Fuegia to Alaska was shaken. Since then the theory has been completely shattered by the

discovery that the two oceans were formerly connected, not by one channel only, but by a considerable number of straits, of varying width, disposed at irregular intervals across the now continuous dry land, which extends for 1200 miles from the Atrato to the Valley of Mexico on the Anahuac tableland. The still flooded basins of this region are even regarded by some geologists as remnants of the long winding sound, which flowed between the two oceans towards the close of the Mesozoic period, that is to say, before the uplift of the mighty volcanoes which now tower thousands of feet above the common pedestal, itself some 7000 or 8000 feet above sea-level.

Nearly all the rich silver lodes lie to the north of the lacustrine depression, another indication that the land tapering thence south-eastwards to the Isthmus of Tehuantepec belonged originally to a different zone from North America proper. But the circumjacent plains and ranges have been so long soldered together that all must now be considered as integral parts of the northern continent, whose true terminal point is the relatively low-lying Tehuantepec depression, not more than 120 miles wide between the two seas. Here also flowed a broad inter-oceanic passage in the Cretaceous epoch, as still clearly shown by the chalk beds of marine origin, which were afterwards upheaved in terrace-like formations, and then overlain with later Tertiary and Quaternary deposits. The land is even now rising on the Pacific side, where the shallow lagoons fringing the coast are slowly drying up. Thus Central, like South America, would appear to be moving still westwards, having also, like the Amazon valley, lost much ground on the east side.

South of Tehuantepec occurred several other marine straits, such as those of the Chirique-David Bays, of Guajoca, Nicaragua, Ochomogo, Horqueta, Panama, and

Darien, all of which have been closed at different times partly by local movements of upheaval, partly by alluvial deposits and lava streams discharged from the surrounding igneous cones. Some of these cones are much older than is commonly supposed, and it has been shown that, for instance, the Costa Rican craters were already active in early secondary times, when the volcanic chain stood in mid-ocean, disposed somewhat in the same direction as that of the Sandwich Islands. Similarly in the Panama peninsula, both the crystalline Veragua range—mainly granites, syenites, schists, and gneiss—and the Panama heights—much weathered dolerites and trachites—are all very old, nowhere showing any recently erupted cones. Hence the eruptions of these plutonic rocks must have taken place while the two oceans still intermingled their waters. The same inference is pointed at by the limestone beds, which occur at many points, and contain early Tertiary fossils mostly resembling the forms which still inhabit the surrounding seas.

The Isthmian Archipelago

From these considerations it follows that the present Central American mainland, like the southern continent, formed originally a vast insular region, which was gradually consolidated in Tertiary and later times. It constituted a great archipelago, which stretched for about 770 miles in a south-easterly direction from Tehuantepec to Panama, and presented certain analogies to the West Indian insular world, with which it is in fact connected by at least two chains of islets, reefs, and partly or wholly submerged marine banks. One of these may be traced from Cape Cruz in Cuba through the Little and Great Caymans and Misterios rocks to the Gulf of

Honduras, while the other runs from Haiti through Jamaica, the Pedro and Serranilla Banks to Cape Gracias a Dios, easternmost point of the mainland.

Igneous Agencies in Central America

There can be little doubt that underground agencies had much to do with the process of filling up the old inter-oceanic channels. Such an inference is pointed at even by a study of the relatively quiescent transverse volcanic fracture on the Mexican tableland. But it becomes almost self-evident, when we contemplate the immense development of the still active igneous forces throughout the whole of the isthmian region. Here are volcanoes which may be reckoned by the hundred, either clustered in groups, or disposed in a long line of mighty cones and yawning craters, where fumes and vapours, if not flames, are somewhere always ascending between Popocatepetl, monarch of the Anahuac plateau and the turbulent Costa Rican Turrialba. Since the discovery at least fifty eruptions and about three hundred earthquakes, often of a most destructive character, have been recorded. But in the prehistoric period such convulsions must have been far more frequent and violent than in later times, since the tendency appears everywhere to be in the direction of a diminution of the subterranean activities. It is, therefore, not surprising that the passages between the two oceans have not merely been blocked, but all but obliterated in many places.

It should be noted that in Central America eruptions are usually of an explosive nature, and that the ejected ashes and scoriæ are often scattered to a great distance, forming by their decomposition thick layers of extremely fertile soil. Hence the surface rapidly

becomes overgrown with a luxuriant arboreal vegetation, beneath which all traces are effaced of the former distribution of land and water. Mr. W. T. Brigham has tabulated as many as six still active or quiescent volcanoes in Guatemala; eight in Salvador; two in Honduras; thirteen in Nicaragua; and three in Costa Rica, besides about forty extinct in the whole region.[1]

Geological History of the West Indies

The Antilles, however, differ in some important respects from the old Central American Archipelago. They occupy an area, not of upheaval, but of subsidence, so much so, that if the northern and southern continents were formerly separated in the west, where they are now united, they may well have formed continuous land in the east where are now nothing but stepping-stones. But these stepping-stones—the Greater and Lesser Antilles—which describe a somewhat undulating curve of over 1000 miles between Yucatan and Venezuela, are composed to a large extent of sedimentary rocks which have been subjected to much folding and dislocation. It is thus obvious that they represent the crests and summits of one or more continuous mountain chains, which are now in great measure submerged beneath the Atlantic waters, but at one time presented an unbroken, or almost unbroken, isthmian bridge between Florida and Venezuela, that is, between the northern and southern continents.[2]

Igneous and Marine Formations

But besides the sedimentary deposits, there also occur both coralline and igneous rocks, all of which, being

[1] *Guatemala*, p. 382 *sq.*

[2] Robert T. Hill, *Cuba and Porto Rico*, etc., 1899.

either of organic or subterranean origin, have no direct relation to the continental framework. They have, however, partly helped to repair the damage caused by subsidence, just as corresponding formations have filled in and obliterated the former inter-oceanic straits farther west. The coral-building polyps are still at work over a wide area, and range even as far as the Bermudas, their utmost northern limit. Large tracts of the marine bed consist of coralline mud, while Cuba, Florida, Yucatan, the Bahamas, and many other islands are encircled by fringing reefs which grow higher and higher, and then breaking to pieces become consolidated by the calcareous cement. On the other hand, while several of the smaller islands have still active or but recently extinct cones, scarcely any trace of recent volcanic action can be discovered in the Greater Antilles, where the very craters have disappeared, although underground disturbances still occur in many places.

Formerly such disturbances must have been far more frequent and violent than at present, and probably contributed with the process of subsidence to break into fragments the ancient isthmian bridge spanning the inland waters. As shown by the arrangement of the insular groups, the bridge itself was disposed mainly in the direction from west to east, or almost at right angles with the northern and southern continents, whose trend is from north to south. Marine explorers have had little difficulty in tracing and mapping the now vanished links of the chain which in many parts still lie so near the surface that the uplift of only a few fathoms would suffice to restore the bridge, and thus convert the inland waters into a completely closed basin.

The "American Mediterranean"—Gulf of Mexico and Caribbean Sea

These island-studded and land-encircled waters also present some remarkable features. Their vast extent is somewhat disguised by their circular contour lines, as well as by the small scale on which maps of the West Indies and Central America are usually drawn. Hence it is difficult to realise the fact that this "American Mediterranean," as it is often called, has a circuit from Cape Sable round to the Bahamas of no less than 12,000 miles, just half the circumference of the globe! A steamer sailing from Key West, and skirting the seaboard of the States, Mexico, Central and South America, and keeping to the inner side of the Antilles, would take about forty days to get back to the starting-point. But this vast inland sea is decomposed into two large and several minor basins, some comparatively shallow, some, such as the Brownson Deep, north of Puerto Rico, revealing prodigious depths of from 4000 to 4500 fathoms. The minor "deeps," however, which are often separated by ridges approaching close to the surface, are of insignificant extent compared with the two great basins of the Caribbean Sea and the Gulf of Mexico, which are clearly divided off by the western section of Cuba, with the peninsulas of Florida and Yucatan, projecting south and north far beyond the normal coast-lines.

The Gulf Stream

A relatively small portion of the great equatorial current, which flows from the west coast of Africa across the Atlantic, penetrates through the Lesser Antilles into the Caribbean Sea and Gulf of Mexico, whence it

returns through Florida Strait to the Atlantic. Here it is lost in the far greater body of tepid water which skirts the outer side of the Great Antilles and Bahamas, and is then deflected from the coast of North America across the Atlantic north-westwards to the British Isles and Scandinavia, and round by North Cape to the White Sea. Before it was known that only a mere fraction of the current came from the Gulf of Mexico, this enormous volume of warm water received the happy name of the "Gulf Stream," a name now too firmly established, and indeed too convenient, to be set aside for any of the alternative expressions which have been proposed as substitutes, on the ground that they indicated the actual relations with more scientific accuracy. In any case the volume of water rejoining the equatorial current north of Florida Strait, though relatively small, forms none the less a liquid mass about 55 miles wide and 450 fathoms deep, moving at the rate of from 2 to 6 miles an hour, and is thus equivalent to as many as 300,000 rivers as copious as the Mississippi.

Climate of the Antilles and Central America

It might be supposed that such a vast body of tepid waters, whose influence is felt as far east as Novaya Zemlya, must convert the tropical inland seas into boiling cauldrons, and raise the temperature in this section of the Torrid Zone so high as to render the islands and encircling regions uninhabitable. Such doubtless would be the case, but for the counteracting influences of the atmospheric currents, of the cooler Pacific waters, and of altitude, by which the action of the Gulf Stream is largely neutralised, and most of the surrounding lands —Cuba, Puerto Rico, Jamaica, Mexico, and many parts of

the isthmian region—made suitable even for European settlement. Terrific hurricanes, such as those by which Guadalupe, Montserrat, Puerto Rico, and several other islands were wasted early in October 1899, occur especially from July to November.

These cyclonic disturbances, which are of local origin, appear to be connected with the cold northern and eastern trade winds, which rush in to fill the vacuum caused by the rarefaction of the atmosphere during the summer months. They thus tend greatly to lower the normal temperature, which, at sea-level, averages not more than 80° F. even in the hot season, and falls to 72° or 74° in winter. On the uplands it is, of course, much lower, and on the mainland from Mexico to Panama both heat and moisture are chiefly determined by the elevated plateaux and mountain ranges. Thus in Guatemala the mean annual temperature ranges from 80° F. on the coast to 58° at Quezaltenango, 7700 feet above the sea, while the Atlantic slopes exposed to the east and north-east trades have a heavier rainfall than those of the Pacific. In general the driest and healthiest regions are those which are sheltered by lofty ranges from both oceans. Thus the precipitation, which on the north side of the Central Guatemalan heights approaches 200 inches, falls below 30 inches in some of the low-lying inland districts.

Throughout Central America thunderstorms are frequent during the *Invierno*, that is, the summer rainy season, which on the Pacific slope is followed by the *Verano*, that is, the dry winter period from November to May. The vertical disposition of the climates and floras, which finds its greatest development in Mexico, occurs also in the isthmian region, where, however, the three superimposed zones—*tierra caliente*, *templada* and

fria—are in few places so sharply defined as in the northern republic.

Flora and Fauna

But everywhere the distribution of the vegetation is determined far more by the elevation of the land than by its greater or less proximity to the equator. Bearing this consideration in mind, it will be found that the prevailing vegetable forms throughout the whole of these intertropical lands is of a far more uniform character than might otherwise be supposed. Thus the presence or absence of characteristic plants, such as the cactus or the agave, has its explanation, not in the higher or lower latitudes, but rather in the higher or lower elevations, taken in connection with the varying aspects of the land. In other words, the vegetation is uniformly distributed, not so much over horizontal surfaces, as along the several vertically disposed hot, temperate, and cold zones, irrespective of their distance from the equator. Thus it is that palms, ferns, orchids, conifers, mahogany, logwood, cacao, vanilla, and many other characteristic plants have an immense meridional range in Mexico and Central America, some forms extending also to the archipelagoes and Guiana. In this and some other respects the last mentioned is a land of transition between the West Indies and South America. The climate is distinctly hot and moist, even "steamy" in the alluvial forest tracts, with a mean temperature of about 80°, but ranging from 70° to 100° and upwards. This region is, on the other hand, free from earthquakes, and scarcely ever visited by hurricanes, though the seaboard from the Amazon estuary to the Gulf of Darien is occasionally swept by fierce gales.

In the West Indies wild animals are rare; but on

the mainland most of the large American fauna—jaguar, puma, tapir, deer, peccary, ant-eater—still abound in all the woodlands. Birds also occur in great variety, and many of these—macaws, toucans, parrots, humming-birds, quetzal, mocking-birds—are remarkable for their gorgeous plumage or their melodious notes. Most of the local fauna have a very wide range, some, such as the coyote, alligator, and mocking-bird, passing into the United States, while the axolotl, most remarkable of all the lower organisms, seems confined to the lacustrine district of the Mexican tableland.

CHAPTER II

ETHNICAL AND HISTORICAL RELATIONS

Pre-Columbian Cultured Peoples—The "Toltecs"—The Nahuas, Aztecs, and Maya-Quichés—Present Ethnical Elements in Central America and the Guianas—Ethnical Relations in the West Indies—The Caribs and Arawaks—The Whites, Blacks, and Asiatics—General Characters of the Aborigines—Table of Mexican and Central American Stock Races and Languages—The Native Languages—The Conquest—Geographical Exploration—New Spain—The "Kingdom of Guatemala"—General Table of Areas and Populations.

Pre-Columbian Cultured Peoples—The "Toltecs"

AT the time of the discovery the whole region from the Rio Grande del Norte to the Amazon estuary, with the adjacent archipelagoes, was occupied by a multitude of peoples representing every plane of human culture, almost from the lowest savagery to the highest phase of civilisation anywhere attained by the primitive inhabitants of the New World. A great portion of Mexico proper, the whole of Yucatan and most of Guatemala, together with parts of Honduras and Nicaragua, were inhabited by a large number of civilised nations, who had from remote times formed political states, some of considerable magnitude, but all fairly well organised, with thoroughly constituted forms of government, highly developed social institutions, polytheistic religious systems,

still mostly at the sacrificial stage, numerous arts and industries, conspicuous amongst which was architecture of a monumental order, and, lastly, a knowledge of letters showing nearly all the transitions from picture-writing to phonetic symbols and, as some hold, to a crude alphabetic system.

Prominent amongst these more advanced nations were the wide-branching Mexican *Nahuas*, in later times represented chiefly by the *Aztecs*, *Acolhuas*, and *Tepanecs* of the Anahuac tableland; the *Mixtecs* and *Zapotecs* of Oajaca and Tehuantepec; and the *Maya-Quichés* of Yucatan and Guatemala. Two more or less distinct culture systems, commonly associated with the Aztecs and Mayas respectively, stand out pre-eminently above the others, while behind all was that of the prehistoric, if not fabulous *Toltecs*, founders or precursors either of the Nahuan or of the Mayan civilisation. Till recently the whole question of the inter-relations of the Mayas and Aztecs, and of both to the Toltecs, seemed involved in hopeless obscurity. But it is now generally understood that the Toltecs, who became identified in the national traditions with the builders of the pyramids of Cholula and Teotihuacan, and in fact of all the monuments of bygone times throughout Mexico and Central America, were not a historical Nahua people at all. The name, supposed to mean "Builders" or "Artificers," and wrongly associated with the imaginary past glories of the Nahuas, would appear to have no reference to them, but merely denoted the people of Tollan or Tola (Tula), the earliest known seat, not of Nahua, but of Maya civilisation on the Anahuac tableland.[1]

Tula still exists or, at least, a modern place of that name stands on the site of the ancient city, which

[1] E. Förstermann, *Globus*, lxx. p. 37 *sq.*

may itself have been a Maya colony from another Tula in the present province of Tamaulipas, a district which was formerly, and is even now to some extent, comprised within the territory of the *Huaxtecas*, that is, the northernmost, and, as would seem, the parent branch of the Maya-Quiché race. But at some unknown period subsequent to the ninth century of the new era, when it had reached the height of its splendour, Tula, with all its works, was overthrown by the barbaric Nahua hordes advancing southwards from their original home in the far north. Coming thus for the first time in contact with the cultured Maya peoples at Tula, the rude Nahua tribes naturally called them "Toltecs," a term which, as is frequent enough in such cases, was later extended to all the early civilised inhabitants of Central Mexico.

The Nahuas, Aztecs, and Maya-Quichés

With this simple solution of the "Toltec question," an explanation is also afforded of the obscure relations in which the Mayas stood to the Aztec descendants of the Nahuas in later times. The theory is that, after the first Nahua invasion, most of the Tula people fled southwards by the Pacific route to Guatemala and Yucatan, where they founded powerful states, which in their turn became new centres of "Toltec," that is, Maya-Quiché culture.

The northern Mayas (the Huaxtecs of Tamaulipas and Vera Cruz on the Atlantic side) thus became isolated, as they are to this day, from all the other members of the family, their kinship with which is shown by the archaic form of Maya speech still current amongst them. Then the Nahuas, after overrunning

the Central Mexican plateau, here slowly developed a new culture, which was based upon, and permanently influenced by that of their Toltec precursors, and at the advent of the Conquistadores had for two or three centuries been mainly represented by the Aztec nation of the Mexican lacustrine district. But some time before their overthrow by Fernando Cortes these Aztecs had pushed their conquests southwards, also by the Pacific route, to Guatemala and Yucatan, where they subdued most of the civilised Maya-Quiché peoples, and even penetrated beyond this region into Nicaragua, everywhere founding settlements amid the surrounding aborigines.

Thus are at once easily explained: 1. The general arrest and decline of the Maya-Quiché political power, arts, and industries at the advent of the whites; 2. The Maya influences which obviously permeate Aztec culture in its earliest and latest aspects; 3. The presence of still surviving isolated Aztec communities in Guatemala and Salvador (*Pipils*), and in Nicaragua (*Niquirans*), all on the Pacific, none on the Atlantic side. Pipil, wrongly explained to mean "Infants," because they could not speak the Nahuatl language properly, is, on the contrary, a shortened form of *Pipiltin*, "Superiors," in reference to the inferior aborigines amongst whom these Aztecs were settled. No Aztec colonies were found in Yucatan, probably because that region had been reached only a short time before the discovery, and was, moreover, already somewhat thickly peopled by the Mayas. All the actual conditions are thus accounted for by the simple process of reversing the popular view and making the Mayas the indigenous element, the Nahuas the intruders, borrowers, therefore, and not lenders in the interchange of cultural

influences. Thus, to give one instance, the supreme Aztec god, *Quetzalcoatl*, is shown to proceed from, not to have begotten the Maya god, *Cuculan*, of which, in fact, his name is a literal translation.[1]

Present Ethnical Element in Central America and the Guianas

But the Nahua hordes, arriving in successive bands from beyond the Rio Grande del Norte, and setting up a series of unstable "empires," such as that of the so-called *Chichimecs* ("Dogs") on the plains of Central Mexico, were unable to assimilate the surrounding upland tribes and weld them together in a single homogeneous nationality. Hence great numbers of these rude populations long continued to preserve their social, and, in some cases, even their political independence. But while a new ethnical group has been slowly developed by the fusion of the Spanish intruders with the Aztecs, Zapotecs, and other semi-civilised peoples, many of the ruder aborigines have also been brought within the cultural influences of this dominant Hispano-American element.

Analogous processes have been at work in the isthmian region, with the result that, apart from a few later intrusions of blacks and Caribs, especially on the east (Mosquito) coast of Nicaragua and in Honduras, the inhabitants of Mexico and the southern republics form at present three somewhat distinct ethnical and social divisions, with a general tendency to be merged in a single Hispano-American population of Spanish speech. These are: 1. A small percentage (nowhere exceeding 19 or 20 per cent) of full blood whites, in

[1] *Cuc* = *Quetzal* = the bird *Trogon resplendens*; *Can* = *Coatl* = snake, *i.e.* the "bright-feathered snake."

Mexico called *Creoles*, mainly of Spanish descent; 2. A large percentage (in some places 38 or 40 per cent, or even the majority) of full blood aborigines, some of Spanish speech, but the great bulk still speaking their original mother tongues; 3. About 50 per cent of varying mixtures of whites and aborigines, generally called *Mestizos* or *Ladinos*, politically and socially the dominant class, and, except in Yucatan, almost exclusively of Spanish speech. But, owing to the defective returns and the difficulty of distinguishing between fine transitional types, estimates vary, and for the five isthmian states Cáceres gives the percentages thus: Mestizos, 65; aborigines, 25; whites, 9; Negroes, 1.

In the Guianas there never were any cultured native peoples, nor have the aborigines—mainly of *Carib* and *Arawak* stocks—to any appreciable extent amalgamated with the whites. These are nowhere numerous, comprising a trifling percentage of British, Dutch, and French officials, traders, planters, miners, and a few Portuguese and other settlers in the urban districts. On the other hand, both the Africans (*Bush Negroes* and others descended from the emancipated slaves) and Asiatics (Indian and Chinese coolies introduced in recent times) are largely represented and, in fact, form the immense majority of the inhabitants. As far as can be ascertained, the whites may be estimated at about 3, the aborigines at 10, the Asiatics at 37, and the Negroes at 50 per cent.

Ethnical Relations in the West Indies—The Caribs and Arawaks

In the Antilles the Negroes are relatively still more numerous, greatly outnumbering all others taken collectively, and politically as well as socially dominant in

Hispaniola, the second largest island, where they have succeeded in founding the two independent republics of Haiti and Santo Domingo. Except a few Carib half-breeds in St. Vincent and Dominica, all the aborigines have everywhere disappeared, although most of the islands are stated to have been fairly well peopled in pre-Colombian times. Some light has been thrown upon the relations of these islanders to the inhabitants of the mainland by the researches of Mr. W. K. Brooks in the Bahamas, where were discovered the remains of the extinct Lucayans, "a well-marked type of the North American Indian race which was at that time distributed over the Bahamas, Haiti, and the greater part of Cuba."[1] Skulls of the same type have also been found both in the neighbouring peninsula of Florida and in Jamaica, and as the extinct Cibunys of Cuba appear to have been of *Arawak* stock, it has been inferred that this widespread family originally occupied all the Greater and many of the Lesser Antilles, thus presenting a continuous chain of kindred groups from Florida to Venezuela and surrounding lands.

But in the prehistoric period this chain had already been broken at several points by the more warlike *Caribs*, who were also found widely diffused over the archipelagoes at the time of the discovery. But the Carib cradle-land has now been located in Central Brazil, so that their migrations must have been, not from north to south, as formerly supposed, but in the opposite direction, from the Amazonian lands to the Guianas and Venezuela, and thence to the insular world. The Caribs must therefore be regarded as the intruders in the Antilles, where the indigenous element was the Arawak, probably from North America.

[1] *National Academy of Sciences*, 1890.

The Whites, Blacks, and Asiatics

Hand in hand with the disappearance of all, or most of these aborigines long before the close of the sixteenth century, the islands were gradually repeopled, first by whites—Spanish, British, French, Dutch, and Norse planters and other settlers—and then by Negro slaves introduced to replace the natives on the plantations. But after the emancipation the blacks, generally speaking, "struck work," and had themselves to be largely replaced by coolies chiefly from India and China. They, however, found congenial homes in their new environment—hot, moist climate and fertile soil—where they have increased to such an extent that, of the 5,000,000 inhabitants of the West Indies, quite 3,000,000 are coloured, either full-blood Negroes or Mulatoes of all shades. A marked tendency has even been noticed to revert to the pure Ethiopic type, especially in places where the African has the field to himself, as in Hispaniola, and even in Jamaica, where of 612,000 coloured as many as 490,000 were classed by the 1891 census as "blacks" and a little over 120,000 as Mulatoes. The same phenomenon has been noticed in the southern States of the Union, where it has been attributed to the great cleavage that has taken place between the European and African sections of the community since the abolition of the plantation slave system. The two races are now far more segregated than before, with the natural result that each tends to eliminate the alien element and hark back to its own primitive type.

From the social point of view the whites have, so to say, been crowded out by the blacks everywhere except in the two islands of Cuba and Puerto Rico wrested by the United States from Spain in 1898. Here they have

not only held their own, but greatly outnumber the Negro in both islands. According to the not quite trustworthy estimates, they stand in Cuba as nearly $2\frac{1}{2}$ to 1 (1,110,000 and 480,000 respectively), and in Puerto Rico are over three-fifths of the whole population (520,000 to 326,000). The Indian and Chinese coolies and other Asiatics are a fluctuating quantity, for which no accurate returns are available, but they probably at no time exceed 100,000, and do not therefore appreciably affect the general statement that in the Antilles, taken as a whole, the Africans and Europeans are in the ratio of three to two, the former being distributed over the whole area, while the latter are concentrated mainly in Cuba and Puerto Rico. Thus an ethnographic map of the West Indies, coloured black and white according to the predominant element, will show one very large and one good-sized white patch, and a multitude of black patches varying in size from the 28,000 square miles of Hispaniola to the few score acres of some of the Bahamas.

General Characters of the Aborigines

In Mexico and Central America the same difficulty is presented as in other parts of the New World in establishing any natural divisions of the inhabitants founded on their physical characters. Thus the hair is uniformly long, lank, and jet black, of the horse-tail texture; the skin varies within narrow limits, from a coppery or reddish brown and light chocolate on the open elevated plateaux to a lighter brown with a faint yellowish tinge in the low-lying wooded districts; the nose is normally long, narrow, and high-bridged or aquiline; the eye small, black, round, and somewhat deep-set; and even the head, formerly relied upon as a dis-

tinctive trait, is now found to pass from the round type of the Mixtecs, Zapotecs, and Maya-Quichés through the medium form of the Aztecs and Chichemecs to that of the long-headed Otomis and Caribs, without any marked relation to geographical areas or vertical zones. The social differences were doubtless here and there extremely pronounced, as between the enlightened Mayas, great architects, astronomers, and artificers, with a knowledge of letters, and the debased Seri of Sonora, who eat their food raw, raise no crops, and live entirely on the chase.

But such social differences, being often due to local conditions, afford unsafe grounds for racial distinctions, and in their grouping of these populations systematists are still driven, as in other parts of the New World, to fall back on the linguistic factor. Unless Otomi forms an exception, all the known languages in Mexico and the isthmian region, as well as in the Guianas, belong to the same polysynthetic order of speech as those of the northern and southern continents. They also present the same astonishing phonetic, lexical, and structural divergences which constitute many of them stock languages, that is, radically distinct idioms no longer reducible to a common mother-tongue, and the number of these stock languages appears to be as great as in other parts of America. Subjoined is a tolerably complete table[1] of the Mexican and Isthmian peoples, as

[1] Based mainly on the almost exhaustive researches of Buschmann, Orozco y Berra, and Pimental for Mexico; and of Squier, Scherzer, Stoll P. Lévy, and Brasseur de Bourbourg for the Isthmian lands. From this table are excluded both the Moqui, Utah, Comanche, Kizh, Netela, and other members of the Shoshone (Snake) family before 1846 comprised in Mexican territory, and also the Zambos or Carib half-breeds commonly called "Moscos" or "Mosquitos," who were re, moved by the English from St. Vincent to Mosquitia in 1796, and are to be distinguished from the true Caribs (Caribisi) of Nicaragua and Honduras.

determined by their stock languages, with their chief subdivisions and respective domains:—

Mexican and Central American Stock Races and Languages

Stocks.	Main Divisions.	Domain.
Huaxtecan or Maya-Quiché	*Huaxtec, Totonac* (?)	Puebla, Vera Cruz, Tamaulipas, S. Luis Potosi.
	Yucatecan (*Maya*), *Lacandon, Itza, Peten, Chaniabal, Ixil, Punctunc, Quiché, Mamé, Cachiquel, Sutughil, Pocoman, Zendal, Chol* (*Mopan*), *Zotzil, Comitec, Jocolobal, Chorti, Cocoh, Cakchi, Poconchi, Achi*	Yucatan, Tabasco, Chiapas, Guatemala, Honduras.
Nahuan or Mexican	*Aztec, Cuitlatec*	Mexico, Pueblo, Hidalgo, Colima, Michoacan, Guerrero, Morelos, Puebla.
	Achaqui (*Topia*), *Sabaibo, Chichimec*	Durango.
	Pipil	Guatemala, Salvador.
	Niquiran	Nicaragua.
	Segua (*extinct*)	Panama.
Güaicuran	*Guaicura, Cochimi Laiman* (*Edu, Didu*)	Lower California.
Opata-Pima	*Opata, Eudeve, Ova, Tarahumara, Cahita, Tepehuano, Yaqui, Yuma, Pima, Papagos, Mayo, Cora, Huichol, Acaxe, Tubar*	Sonora, Chihuahua, Durango, Sinaloa, Jalisco, Zacatecas.
Tinné or Athapascan	*Apache* (*Yavipai*), *Lipan, Llanero, Yuta, Chemegue, Muca-Oraïve, Faraon*	Sonora, Chihuahua, Coahuila.
Seri	*Upanguaima, Guaima*	Sonora, Tuberon Island.
Tarascan	*Tarasco*	Michoacan, Guerrero, Jalisco.
Matlalzinca	*Matlalzinca* (*Pirinda*), *Ocuilteco*	Michoacan, Mexico.
Otomi	*Otomi proper* (*Serrano*), *Mazahua, Meco, Pame*	Guanajuato, Hidalgo, Queretaro, Mexico
Zoque-Mixe	*Zoque, Mixe, Tapijulepa*	Oajaca, Tabasco, Chiapas.
Mixteco-Zapotec	*Mixteco, Tepuzculano, Xaltepec, Haziaco, Zapoteco, Chocho, Amusgo, Cuicateco, Popoloco, Papabuco, Mazateco, Solteco, Chatino*	Oajaca, Puebla, Guerrero.
Huave	*Huave, Huazonteco, Chiapaneco*	Oajaca, Chiapas.
Chorotegan	*Dirian, Nagrandan, Orotiñan, Mangues*	Nicaragua.

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Stocks.	Main Divisions.	Domain.
Lencan or Chontal	*Tuca, Wulwa, Rama, Tungla, Carca, Paya, Sova, Hicaco (Xicaco), Laman, Melchora Siquia, Guatuso* (?)	Nicaragua, Honduras, Costa Rica.
Talamanca	*Chirripo, Cabecar, Viceita, Tiribié, Bribri, Boruca (Brunca), Terreba Guaymi*	Costa Rica, Panama.
Cuna	*Durasco, Darien (Paparo), Choco, Queve (Cueve), Tule (Ti)*	Panama.
Carib	*Caribisi, Zuma, Waikna, Guanahacabibes (extinct)*	Nicaragua, Honduras, Cuba.
Arawak	*Cibunys, Lucayans (all extinct)*	Cuba, Bahamas.

(For the Guianas see vol. *South America*, p. 41.)

The Native Languages

Several of the idioms here bracketed together present such profound differences in their structure, vocabulary, and phonesis that they are regarded by some philologists as stock languages. Such are especially the Opata and Pima, with one or two of their chief branches, the Zoque and Mixe, the Mixtec and Zapotec, the Bribri and others of the Talamanca group, and the Choco classed with the Cuna family, although showing marked affinities with the Baudo still surviving in the San Juan valley, Colombia. On the other hand, a great many radically distinct idioms have disappeared since the discovery, at which time as many as two hundred stock languages were current in Mexico and the Isthmian lands, as far at least as may be inferred from the imperfect indications afforded by the statements of the early writers.

Nearly all these languages belonged, as stated, to the polysynthetic order of speech, the peculiar character of which is elsewhere described (*South America*, p. 34). Some, such as the Aztec, the Mixtec, and the Tarascan, present these characters even in an exaggerated form, the

tendency to clip the words and fuse the parts of speech in a single composite sentence resulting in terms of prodigious length. Massive concretions of sixteen, eighteen, or even twenty syllables are quite common, as in the Mixtec *yodoyokavuandisasikandiyosanninahasasan*, to walk with a shambling gait; the Aztec *totanquitlaxcallillaquelpacolli*, a kind of maize cake; and in the same language *Popocatepetl* is contracted from *Popocanitepetl*, the "Smoking Mountain." In the Carib *arametakualubatibubasubutuiruni*, "know that he will conceal thee," two verbs with their relational particles and pronominal elements are merged in one, and an almost universal feature is the union of the transitive verb with its direct nominal object, as in the Tarascan *hopocuni*, to wash the hands, *hopodini*, to wash the ears, and so on. The principle is carried so far that it is impossible to speak in an abstract way of the act of washing independently of the thing to be washed, so that if a Tarascan is asked to say what is "to wash" in his language, he will immediately reply *wash-what? wash-face? wash-clothes?*

An exception has been claimed for the Otomi, which, by a native grammarian, has been described as a monosyllabic language like Chinese, and on this assumption some fanciful theories have been advanced on the Asiatic origin and early relations of the Mexican peoples. But it has been shown that Otomi also was at first polysynthetic, its present apparent monosyllabic state being due to profound disintegration and phonetic decay, as is evident from its more archaic Mazahua dialect, which is "still decidedly polysynthetic" (Charancey).

The Conquest—Geographical Exploration

As in other parts of Latin America, the work of exploration and conquest went on at first hand in hand in the Antilles, in Mexico, and the Isthmian region. Thus, as soon as the native states and independent tribal groups were brought under Spanish control—a work accomplished before the close of the sixteenth century—the main geographical features of all these lands were also roughly determined, and nothing remained except to fill in the details—a work not yet everywhere completed. The twofold process began on 12th October 1492 at Guanahani, one of the Bahamas, which was the first land reached by Columbus on his first voyage, and was by him renamed San Salvador. By a strange fatality both of these names have long disappeared from the maps, where they never had a sure "local habitation." Hence their identification has given rise to much controversy, though the choice certainly lies between the present Watling, Cat, Mariguana, and Atwood or Samana Cay, this last having perhaps the best claim to the distinction.[1]

From this point the great navigator reached Cuba in a few days (28th October), and during his three subsequent voyages discovered a large number of the Antilles as far south as Trinidad (1498), besides coasting the Panama and Nicaraguan seaboard (1502-4), remaining all the time firmly convinced, despite all the protests and arguments of his associates, that he had arrived at the India of the Old World, and had thus nearly circumnavigated the globe. Hence, also, his great disappointment at the failure of his efforts to find the marine passage, which he naturally supposed must

[1] G. V. Fox, *United States Coast and Geodetic Survey*, Report, 1880.

somewhere exist in the Isthmian region, and by following which he would again reach Spain, sailing continually toward the setting sun. But although the mistake was discovered long before the globe was proved by the voyage of Magellan to be very much larger than Columbus had supposed, it was already too late to correct his terminology, and to this day the Antilles remain the "West Indies" to distinguish them from the "East Indies," while the American aborigines have everywhere become "Indians."[1]

On the mainland the progress of discovery and conquest proceeded almost simultaneously in two opposite directions—from Panama through Costa Rica northwards, and from Mexico through the Isthmus of Tehuantepec southwards. Notwithstanding the widespread fame of the great Aztec empire, Mexico itself was not discovered till 1517, when the Cuban planter, Hernandez de Cordoba, enlarging the range of his slave-hunting raids, reached Cape Catoche at the north-east angle of Yucatan, and thence followed the north and west coasts of the peninsula as far as Champoton on Campeche Bay. Here further progress was arrested by a disastrous collision with the Mayas; but the exploration of the seaboard was continued in 1518 by Juan de Grijalva from this point for 600 miles round the bay to the present seaport of Tampico.

Thus was prepared the way for the memorable expedition of Fernando Cortes, who, after reducing the natives of Tabasco (1519), sailed north to S. Juan de Ullua, and here founded the settlement of Vera Cruz. From this point he struck inland through the territory

[1] Another curious result of the initial error is that we now avoid applying their proper name to the true Asiatic Indians, who have become *Aryans* in the north, *Dravidians* in the south, and collectively *Hindus*.

of the friendly Tlaxcalas, overthrew the Aztecs in the great battle of Otumba (July 1520), and after many vicissitudes captured their Emperor, Montezuma, with his capital, Tenochtitlan, the present city of Mexico (1521).

Then followed Cortes's almost more astonishing march from Mexico through North Guatemala to Honduras (1524-25), which had been seized by a rival adventurer, Cristoval de Olid, in 1523, while his lieutenant, Pedro de Alvarado, at the head of a small band, overran the western parts of Guatemala. Before his rebellious action in Honduras, Olid, with his associate Sandoval, had penetrated through the provinces of Michoacan and Colima to Manzanillo on the Pacific. A few years later the whole of the west coast with the Gulf of California was surveyed by Ulloa, Gimenez, Alarcon, Grijalva, and Cortes (1530-40), Alarcon even ascending the Rio Buena-Guia, now known as the Colorado, for a distance of "85 leagues." This parched, arid region received its name of *California* (*Calida fornax*, "hot furnace") from Cortes in 1535, while the Gulf was called the "Vermilion Sea," either from the abundance of red sea-weed floating about, or more probably from the deep-red colour of its sandy shores. These preliminary coast surveys were completed by Cabrillo, who in 1542 rounded the headland of Cape St. Lucas, and coasted the Californian sea-board far beyond San Francisco Bay to a point supposed to be the present Cape Mendocino, about 40° N. lat.

Simultaneously with the maritime surveys the interior of North Mexico was being rapidly opened up by Nuño de Guzman, who occupied and laid waste the provinces of Jalisco and Sinaloa in 1530-32; by Nuñez Cabeza de Vaca, who, after crossing the Floridas, was the

first to reach Mexico from the north (1536); by Marcos de Niza (1539) and Coronado (1540-42), who advanced beyond the present political frontier into the Pueblo territories of New Mexico and Arizona, the latter also founding settlements in the rugged uplands of Sonora.

New Spain

Thus in the two decades that followed the overthrow of the Aztec power, the restless Spanish pioneers had surveyed the whole of the Atlantic and Pacific seaboards, had crossed from ocean to ocean at several points, penetrated northwards far into regions now forming part of the United States, and southwards to the utmost limits of Montezuma's empire. All the provinces of the empire, as well as all the other civilised States—Mixteca, Zapoteca, Michioacan, Tarasco, Matlalzinca, Totonac, and the independent Maya-Quiché territories—were reduced and grouped together in a single political system, which received the proud title of *New Spain*, and was at first administered by a Governor, later by Audiencias and Viceroys, with seat of government in the city of Mexico.

This magnificent colonial empire, which, before the loss of the northern provinces now forming part of the American Union, must have had an area of over 2,000,000 square miles, lasted just three centuries, the war of independence having been brought to a successful close in 1821 after a severe struggle of eleven years. Then, by an extension of the name of the capital justified on historic grounds, New Spain became Mexico, and since 1857 the Mexican Republic, a federation of self-governing States, amongst which is included the province of Chiapas, detached in 1823 from Guatemala.

With the conquest and exploration of Costa Rica are associated the names of Espinoza, who surveyed the west coast in 1514, and Alvaro de Acuña, who, with his associate Juan Solano, invaded the territory, and founded some settlements on the plateaux of San José and Cartago about 1520.

Nicaragua, which had already been coasted on the Atlantic side by Columbus in 1502, was reached in 1522 from the Gulf of Nicoya by Gil Gonzalez Davila, who sent his lieutenant, Cordova, to circumnavigate the great lake. This region takes its name from the powerful chief *Nicaragua* (written also *Micaragua*), who ruled over most of the land between the Pacific and the lakes, and gave Davila a friendly welcome. Then the Spaniards, advancing from this district northwards, and under Hernando Ponce from Honduras southwards, rapidly overran a great part of the country; and after several conflicts between the rival captains, Granada was founded in 1524 as the capital of a separate but short-lived government.

Honduras was the first part of the mainland visited by Columbus, who, after occupying the Isle of Pines in 1502, had sighted the hills about Punta Casinas, that is, the present Cape Honduras. In 1522 Puerto Caballos was discovered by Davila, and in 1535, ten years after the foundation of Trujillo, the conquest of the country was begun by Olid, Pédro Alvarado, Chaves, and Cordova, and completed by Caceres, about four-fifths of the natives having perished during the process.

The occupation of Guatemala by Cortes and Alvarado has already been referred to. From Guatemala the same Alvarado passed into Salvador, where, after much bloodshed, he reduced the powerful Pipil nation about 1524. Four years later the capital, San

Salvador, was founded by his brother Jorge (or Diego) Alvarado.

The "Kingdom of Guatemala"

During the Spanish régime, which for Central America was brought to an end in 1821, the whole of the Isthmian region between Mexico and Panama was comprised in a single administrative division — the "Captain-Generalship of Guatemala," or, as it was popularly called, the "Kingdom of Guatemala"—under an administration independent of New Spain, and directly responsible to the Home Government. To the Spanish rule succeeded a central provisional Government, which in 1824 was constituted a Federal Republic of the five States of Guatemala, Salvador, Honduras, Nicaragua, and Costa Rica—that is, the whole region except the colony of British Honduras acquired by England in 1797. This arrangement lasted till 1838, when the partnership was dissolved, and since then the five federal States have formed five separate republics. Including British Honduras the collective area of Central America is estimated at 225,000 square miles, with a population of 3,768,000.

General Table of Areas and Populations

Including the Guianas—British, Dutch, and French—the Greater and Lesser Antilles and Bahamas, with the outlying little groups of Trinidad and Tobago, the Bermudas and Barbados, the various lands which are dealt with in the present volume have a total area of about 1,290,000 square miles, with a population roughly estimated at 22,550,000, distributed as under:—

95°
65°
60°
C O C E A N
Tropic of Cancer
20°
G U
O F M
I N D I E S
(HISPANIOLA)
Brumsom Deep
PUERTO RICO
Montserrat
GUADELOUPE
Dominica
15°
Campeche Bay
Vera Cruz
L E S
S E A
St Vincent
ESSER ANTILLES
T O R R I D Z O N E
CA
V E N E Z U E L A
A M E R I
5°
95°
West 70 of Greenwich.
65°
Stanford's Geog.l Estab.t London.

		Area in sq. miles.	Pop. 1890-98.
	Mexico	767,000	12,620,000
Central America.	Guatemala	63,400	1,535,000
	Honduras	43,000	400,000
	Salvador	7,230	800,000
	Nicaragua	49,200	420,000
	Costa Rica	23,000	294,000
	Panama	31,570	285,000
	British Honduras	7,560	34,000
Greater Antilles.	Cuba, with I. of Pines	45,870	1,632,000
	Hispaniola :—		
	Haiti	10,204	960,000
	Santo Domingo	18,045	610,000
	Puerto Rico	3,600	800,000
	Jamaica	4,424	640,000
Lesser Antilles.	Windward Group	4,365	615,350
	Leeward Group	3,945	
	Trinidad and Tobago	1,868	275,000
	Bahamas	3,021	48,000
	Bermudas	20	16,000
	Barbados	168	190,000
The Guianas.	British Guiana	110,000	286,000
	Dutch Guiana	46,000	64,000
	French Guiana	47,000	23,000
	Total	1,290,490	22,547,350

CHAPTER III

MEXICO: PHYSICAL FEATURES

Extent and Break up of the Spanish Viceroyalty—Boundaries and Extent of the Mexican Republic—Areas and Populations—Constituent Elements of the present Mexican Population—Physical Features—The Plateau Formations—Their Geological History—The Western and Eastern Sierra Madres—Scenery of the Western Range—Mineral Wealth—Geological Formation—The Mexican Volcanic System—Popocatepetl—Ixtaccihuatl—Orizaba—Cofre de Perote—Jorullo—Earthquakes—Hot Springs—The Bramidos of Guanajuato.

Extent and Break up of the Spanish Viceroyalty

IN colonial times the frontiers of New Spain might have been described as *boundless*, in the strict sense of the term. No doubt they were then, as now, fairly well limited towards the south, where Mexico is conterminous south-eastwards with Guatemala and British Honduras, while it is confined east and west by the Atlantic (Gulf of Mexico and Caribbean Sea) and Pacific Oceans. But towards the north the viceroyalty broadened out for unknown distances in almost every direction, comprising or claiming at one time all the land about the Gulf and thence westwards to California, and northwards to the headwaters of the Missouri.

But such a vast area could not be effectively occupied, and the pretensions of Spain to a great part

of the northern continent were challenged at an early date, especially by the French, both in Florida and, more successfully, in the Mississippi basin. By this intrusion of the French in the Gulf region, Florida became cut off from the rest of the Spanish main, and had to be ceded in 1820 to the United States, which had bought the French out of Louisiana in 1801. But what Louisiana meant nobody quite knew, and in the opinion of some international jurists the expression covered everything between the south-eastern States and the Rio Grande del Norte. In any case the political barriers were powerless to prevent the expansion of the Anglo-American people beyond the Lower Mississippi, and thus arose those frontier troubles during which Texas first set up as an independent republic, and then joined the Union by the treaty of Washington, signed on April 25, 1838. Then followed the disastrous war of 1846-47, resulting in the Guadalupe-Hidalgo and Gadsden treaties, by which everything beyond the present northern limits of Mexico was ceded to the United States. By these various losses the republic was reduced to considerably less than half its former size, as shown in the appended table :—

	Sq. miles.
Texas and neighbouring tracts, annexed 1838 . . .	362,487
Arizona, New Mexico, California, Colorado, Nevada, Utah, and part of Wyoming, ceded 1848-53	568,103
Total	930,590

Boundaries and Extent of the Mexican Republic

What remains, some 770,000 square miles, presents the form of a cornucopia, broadening out northwards where the boundary towards the United States follows

the Rio Grande from its mouth for 1136 miles beyond El Paso, Texas, to 31° 47′ N. lat. From this point it runs for 100 miles along the same parallel, and thence south to 31° 20′ N. lat., which is followed west to 111° W. long., where the line is drawn straight to the Rio Colorado, 20 miles below its confluence with the Rio Gila. Thence it ascends the Colorado to the old line between Upper and Lower California, from which point it is continued straight to the Pacific Ocean just below San Diego Bay, a total distance of 674 miles from El Paso, and 1833 from the starting-point on the Gulf of Mexico. This long and somewhat irregular frontier line makes Mexico now conterminous towards the Union with the States of Texas, New Mexico, Arizona, and California, and as the line is drawn clear of the "Vermilion Sea," it leaves to the republic the whole of the Gulf and Peninsula of Lower California.

Southwards the "cornucopia," with its concave side sweeping round the Gulf of Mexico, is separated from Guatemala by another irregular line which, as determined by the treaties of September 1882 and April 1895, runs from the Pacific Coast at 14° 24′ N. lat. up the little Rio Zuchiate, and thence north by east to the Rio Usumacinta, with which it coincides to about 17° N. From this point the boundary was before 1895 formed by a conventional straight line eastwards to British Honduras. But since then it follows three straight lines, east, north, and again east along the borders of the provinces of Tabasco, Campeche, and Yucatan to the north-west side of the English colony. Here the line, as laid down by the treaty of July 1893, runs from the Bocalarchica inlet between Yucatan and Ambergris Bay to and up the Rio Hondo south-

westwards to the converging point of Yucatan and Guatemala.

Areas and Populations

As thus finally delimited, Mexico still remains large enough to comprise as many as twenty-seven federal States with two territories, and the Federal District, with areas and populations as under :—

	Area in sq. miles.	Pop. 1879.	Pop. 1895.
ATLANTIC STATES—			
Tamaulipas	32,128	140,137	206,502
Vera Cruz	29,201	542,918	866,355
Tabasco	10,072	104,747	134,839
Campeche	18,087	90,413	88,302
Yucatan	35,203	302,315	298,850
Total	124,692	1,180,530	159,848
INLAND STATES—			
Chihuahua	87,802	225,541	262,771
Coahuila	63,569	130,026	241,026
Nuevo Leon	23,592	203,284	309,252
Durango	38,009	190,846	286,906
Zacatecas	24,757	422,506	452,578
San Luis Potosi	25,316	516,486	568,449
Aguas Calientes	2,950	140,430	104,615
Guanajuato	11,370	834,845	1,062,554
Queretaro	3,556	203,250	228,551
Hidalgo	8,917	427,350	558,769
Mexico	9,247	710,579	841,618
Federal District	463	351,804	476,413
Morelos	2,773	159,160	159,355
Tlaxcala	1,595	138,988	166,803
Puebla	12,204	784,466	984,413
Total	316,125	5,430,561	6,704,073
PACIFIC STATES—			
Lower California (Ter.)	58,328	30,208	42,245
Sonora	76,900	115,424	191,281
Sinaloa	33,671	186,491	258,865
Tepic (Ter.)	11,257	...	148,776

PACIFIC STATES—*continued*	Area in sq. miles.	Pop. 1879.	Pop. 1895.
Jalisco	31,846	983,484	1,107,227
Colima	2,272	65,827	55,752
Michoacan . . .	22,874	661,534	894,763
Guerrero . . .	24,996	295,590	417,621
Oajaca	35,382	744,000	884,909
Chiapas . . .	27,222	205,362	319,599
Total . .	324,768	3,287,920	4,321,038
GRAND TOTAL . .	766,185	9,908,011	12,619,959

Constituent Elements of the Present Mexican Population

Here an increase of nearly 3,000,000 in the whole population is recorded between the years 1879-95, and if some estimates could be trusted, a much higher figure would have to be quoted. In any case the increase has been going on during the whole of the nineteenth century, or at least since the year 1810, when a more or less trustworthy enumeration of the inhabitants of New Spain was prepared by Don Fernando Navarro of Noriega, and published in Humboldt's *Political Essay*. The result for that date was 6,122,000, where a deduction of probably over a million must be allowed for the vast though thinly-peopled northern regions at that time included in the viceroyalty. This would leave not more than about 5,000,000 for the provinces now comprised in the republic, so that the figure has been trebled since 1810, if Don Matias Romero's estimate of 15,000,000 for 1898 can be taken as approximately correct.[1]

But the progress has not been uniform for all sections of the population, as shown by the subjoined table of the returns for the three main divisions—full-

[1] *Coffee and India-rubber Culture in Mexico*, New York, 1898.

blood Europeans, full-blood Indians and Mestizos in 1810 and 1879:—

	1810.	Per cent.	1879.	Per cent.
Whites . .	1,107,000	18	1,900,000	20
Aborigines .	3,676,000	60	3,513,000	43
Mixed . .	1,338,000	22	4,083,000	37

For 1895 the respective percentages were stated to be 19, 38, and 43, from which it would appear that, while the proportions have remained about stationary during the last sixteen years, the whites have been nearly doubled, the Mestizos trebled, and the Indians reduced by 17 per cent on the whole population since 1810. There is considerable doubt as to the accuracy of some of these figures, as shown by the fact that in 1882 the Indians were estimated at no less than 3,765,000, implying an actual increase of some 250,000 in three years (1879-82). But so great is the difficulty of distinguishing at times between full-blood and half-caste natives, that such discrepancies are not surprising, and the prevailing impression that the whites are holding their own, the Mestizos steadily increasing, and the Indians falling off, or at least merging in the general population of Mexican nationality, may be regarded as fairly well established by the statistical returns.

Physical Features—The Plateau Formations—Their Geological History

From the physiographic stand-point, Mexico is clearly divided by the low-lying Tehuantepec Isthmus into two distinct geographical regions. The section south of the isthmus belongs partly to the Central American (Guatemalan) mountain system, partly to the Yucatan limestone plateau formation, which is of coralline

(marine) origin. The section north of the isthmus is also usually described as a plateau formation, enclosed by two mountain ranges—the *Sierra Madre Oriental* and *Sierra Madre Occidental*, that is, the "Eastern" and "Western" Sierra Madres. But, notwithstanding their great present development and altitude, ranging from 6000 to 9000 feet and upwards, the Mexican plateaux are not now regarded as tectonic, that is, belonging to the original framework of the land, but rather as later formations, slowly built up long after the constitution of the two very ancient crystalline and archæan Sierra Madres. The process would appear to be somewhat analogous to that by which the river valleys of the Pamir region have been gradually raised to their present high level, the accumulation of detritus from the enclosing escarpments proceeding at a more rapid rate than the scouring action of the running waters. "Much of this plateau has been formed by a progressive and long-continued accumulation of detrital material, representing in part the distributed products resulting from mountain destruction and in greater part the discharges from an almost endless number of volcanic openings. These have, as it were, filled the original valleys to their lips, and it is thus upon the new surface that the more recent or existing valleys have been imposed" (A. Heilprin).

This view is confirmed by the graduated disposition of the tablelands as if they had been filled in at different periods and now rise in successive terraces from Tehuantepec through Oaxaca and Puebla northwards to the Anahuac or Mexican plateau. Thus are presented to the traveller ascending by rail from Vera Cruz to the interior that astounding succession of terraced plains and steep wooded escarpments rising higher and

higher to an altitude of 7000 or 8000 feet. Here is developed the great central *Anahuac*,[1] or *Mexican, Table-land*, next to those of Tibet and the Bolivian Andes, the loftiest and most extensive on the globe. From the lacustrine Valley of Mexico it stretches away at a nearly uniform elevation of 7500 feet for interminable distances northwards to the United States frontier about El Paso on the Rio Grande del Norte. To convey an idea of its uniform character writers have often remarked on the possibility of driving in a carriage all the way from the city of Mexico to El Paso, and even beyond it to Santa Fé in New Mexico, across some 15° of latitude. In a total distance of 1225 miles the absolute incline is only 3632 feet, from 7350 at the capital to 3718 at El Paso. With this may be compared the fall of 7350 feet from the capital to Vera Cruz at sea-level, a distance of only 264 miles by the railway *viâ* Orizaba, or 340 miles by the line through Jalapa, both of which have to climb the escarpments of the eastern Sierra Madre to reach the Valley of Mexico.

But this surprising uniformity is here and there broken by the so-called *barrancas*, enormous fissures, or rugged depressions sinking to depths of many hundreds and even a thousand feet into the ground, often measuring several miles across, and usually clothed with a rich arboreal vegetation. No doubt the term "barranca" is applied in a general way to all deep valleys, ravines, or gulches with steep sides. But in Mexico it has a special reference to those yawning chasms which appear to be

[1] This term was first applied by the Aztecs to the Valley of Mexico, where they founded their capital, and was then extended with the growth of their empire to the central plateau generally. Meaning "Amid the Waters" in reference originally to the lakelets of the valley, it acquired a larger significance when applied to the whole region lying between the Atlantic and Pacific Oceans.

formed by the slow action of running waters, especially in soft and gravelly soil. Where the ground is fertile and the water abundant the steep slopes of the gorges are covered with luxuriant growths of trees and shrubs down to the margin of the streams winding between their leafy banks. But on the arid and barren uplands barrancas with bare sandy or rocky sides are common enough. Amongst the most remarkable of these romantic formations are the *Barranca de Mochititle* between Guadalajara and Tepic, and that of *Beltram*, which descends the western slopes from Guadalajara to Colima. Beltram was carefully examined by Geiger, who found the depth of that chasm from the plateau to the bed of the stream to be 525 feet. Down its almost perpendicular sides a zigzag mule track had been constructed at enormous labour, and most of the larger barrancas were provided with similar bridle-paths in colonial times.

The Western and Eastern Sierra Madres

While the connection formerly supposed to exist between the Mexican Sierra Madres and the Andean Cordilleras has been disproved by the geologists of the French expedition of 1864, the nature of their more probable relation to the northern Rocky Mountains has not yet been clearly established. That they form a southern continuation of that mighty system at least as far as the transverse igneous chain about 19° N. lat., beyond which both ranges gradually converge in the State of Oajaca is likely enough, but, pending further research, cannot be regarded as free from doubt.

Both ranges run nearly parallel with the shore-line, the eastern at distances of 10 to 100 miles from the Gulf of Mexico, the western approaching much nearer to

the Pacific Coast, towards which its northern section also falls more abruptly. The Pacific range is, moreover, the loftier and more continuous, maintaining with little interruption a mean altitude of from 10,000 to 12,000 feet for 2000 miles from Oajaca far into Arizona.

Parallel with it is the *Sierra de la Giganta*, which traverses the Californian peninsula at a mean height of

PEAKS OF CANDELARIA—RANGE WEST OF VALLEY OF MEXICO.

perhaps 4000 feet, but falling precipitously, not towards the Pacific, but on its inner side down to the gulf. Hence the peninsula would appear to have been detached from the mainland when occurred the general upheaval which produced the vast chasm now flooded by the Gulf of California.

The far less elevated and more interrupted eastern Sierra rises in some places little above the level of the

central plateau, and has consequently the aspect more of an escarpment than of a true mountain range. In the Nuevo Leon and Tamaulipas sections, all called "Sierra Madres," it is scarcely more than 6000 feet high, and is crossed at several points by passes less than 5000 feet high. Such are those on the routes between Tula and Tampico (4820), and between Saltillo and Monterey (3400).

North of the Cofre de Perote volcano in Vera Cruz the eastern Sierra Madre skirts the shores of the Gulf of Mexico without any break as far as the Rio Panuco on the frontier of the State of Tamaulipas. In this section it slopes somewhat gently seawards, and much more abruptly westwards down to the Anahuac plateau. Beyond the Panuco the main range, having thrown off several spurs and ridges towards the central plains, begins to diverge gradually from the coast-line, taking a normal north-westerly trend along the eastern edge of the plateau for the rest of its course to the Rio Grande. In Guanajuato are developed three separate chains, which are continued for a long way in nearly parallel lines, the most easterly being the Sierras de Tamaulipas and Martinez. Beyond Nuevo Leon the whole system is continued through Coahuila, where it skirts the Bolson de Mapimi wilderness on the east, and runs parallel with the lower course of the Rio Grande until it merges northwards in the Apache range of Western Texas.

Scenery of the Western Range

When studied in detail the contrasts between the Pacific and Atlantic systems become still more marked, the former being generally of a more rugged character, and presenting a far greater diversity of outline in the

varied forms of its peaks, domes, and crests, in its cirques, upland valleys, and romantic lake scenery. In the Sonoran highlands especially there is an endless variety of scenic effects—groups of high dome-topped hills clothed with long grasses and studded with clumps of mountain oak or dwarf pine; huge chasms encircled by tall crags and steep, water-worn gullies; long ridges covered with

FALLS OF JUANACATLAN, OUTLET OF LAKE CHAPALA.

pine and cypress forests, and here and there streaked with snow; the so-called *llanos*, corresponding to the charming "natural parks" of the Rocky Mountains, meadow-like level spaces irrigated with sparkling streams and interspersed with clusters of stately trees—all following in rapid succession in the course of a day's journey.

Farther south the scene again changes, and in the very heart of the Sierra Madre the traveller comes upon

a lovely lacustrine district scarcely surpassed in the world for the splendour of its varied beauties. Here are in the State of Jalisco the magnificent *Lake Chapala*, and in Michoacan, *Lakes Cuitzeo* and *Patzcuaro*, the first a sheet of water 60 miles by 20, the other two about half that size, but all distinguished by every feature of natural charm imaginable. On an island in Lake Cuitzeo Mr. O. H. Howarth visited "a small independent tribe of peaceable Indians here established from time immemorial, with customs, language, and physical characteristics distinct from others in the same State." [1]

In another part of the Sierra, overlooking the plains of Durango, the same traveller came upon a remarkable freak of nature locally called *La Muerte*, "Death," because seen from a certain point of view it presents the outlines of a gigantic human skeleton, one hand on its hip, the other raised aloft, and one foot lifted, in the attitude of a grotesque dance. So correctly carried out are all the details, that it seems difficult to believe the figure has not been touched up by human agency, though its great size and position preclude any such possibility.

Mineral Wealth

Such eccentric rock formations occur especially where pressure has been most severe over a limited area, and in the Sierras this pressure is found to be in direct relation with an amazing wealth of metalliferous, and especially of silver veins. The "mother-veins," as they are called, are almost invariably disposed in the direction from north-east to south-west, so much so that those running in any other direction are disregarded by the more experienced miners. They have also, as a rule, a nearly

[1] *Jour. Geograph. Soc.* 1895, ii. p. 425.

vertical position, the consequence being that the workings carried out on the "rat's plan," that is, following the vein wherever it leads, have penetrated in some of the old mines to depths of from 1500 to 2000 feet. Some of the ores contain very high percentages—50, 60, or even 80—of metal, and solid nuggets of great size are not unknown. "One mine in Chihuahua produced from a globular cavity a solid silver ball weighing 445 lbs., in which scarcely any foreign matter was present. Many of the tales of silver production which sound more or less fabulous are undoubtedly quite correct. A single mine has been known to produce the value of a hundred million dollars; and this being a matter of official record at a period when the metal was subject to taxation either by the church or the municipal governments, or both, the return is far more likely to have been understated than exaggerated" (Howarth, p. 427).

Scarcely any of the horizontal layers appear to be very rich in ores, which occur mainly in the metamorphic, palæozoic, and hypogene rocks of the eastern Sierra, as far north as Chihuahua, and westwards to the Gulf of California in Sinaloa and Sonora. These two provinces, which, owing to their remoteness and rugged character, had been neglected in colonial and later times, are now known to contain vast stores both of gold and silver. But nearly all the historical mines are grouped about the central plateau at altitudes of from 5500 to 9500 feet. A line drawn from Guadalupe y Calvo on the east slope of the eastern Sierra Madre in south Chihuahua through Guanajuato and the capital southwards to Oajaca, thus cutting the main axis of upheaval at an angle of 45°, will intersect perhaps the richest argentiferous region in the world. Thus, although most of the Mexican highlands are interspersed with metalliferous ores, the chief deposits

occur in the Pacific range, and throughout its entire length of about 1600 miles, with a normal trend from north-west to south-east between Sonora and Oajaca.

Humboldt's prediction that Mexico would become "the storehouse of the world" has already been largely verified so far as regards the "white metal." Yet it is the opinion of the best authorities that not more than one-tenth of its mining resources has been discovered, and even this estimate is believed by Romero to be well within the mark. The present output of silver represents over one-third of the world's produce, although drawn mainly from the three mineral districts of Guanajuato, Zacatecas, and San Luis Potosi, the last mentioned being the chief centre of the industry towards the eastern Sierra Madre. The Veta Madre lode of Guanajuato alone yielded over £50,000,000 between 1556 and 1803, and the present annual output of all the Mexican silver mines is estimated at about £10,000,000 (Romero).

Gold, hitherto little mined, is known to abound in the Californian Gulf States, and an almost untouched auriferous belt, comparable to those of California, Klondyke, and Transvaal, has been traced from Sonora along the west side of the Pacific range all the way to Oajaca. But the industry has scarcely yet been seriously developed, and from the sixteenth century to the present time not more than £25,000,000 of gold coinage has been issued by the Mexican mints, which during that period has flooded the world with £680,000,000 of silver crowns and doubloons. Since 1537 the total mintage has been £706,000,000, thus distributed:—

Colonial Epoch (1537-1821)	£430,000,000
Independence (1822-1872)	162,000,000
Republic (1873-1896)	114,000,000
	£706,000,000

In the returns is included a small amount—about £2,220,000—of copper, a metal which exists in large quantities in Lower California, Aguas Calientes, San Luis Potosi, and other districts. In 1897 the output exceeded 22,000 metric tons, mostly from the Boleo mine near Santa Rosalia on the Gulf of California.

Iron ores are widely diffused, and generally contain high percentages of pure metal. The *Cerro del Mercado*, discovered in 1562 in Durango by Gines Vazquez del Mercado, and named from him, is a hill 640 feet high, containing over 300,000,000 tons of solid ore down to the level of the plain, below which the mineral, averaging about 70 per cent of metal, extends to an unknown depth. Several mines are already worked in Durango, Zimapan, Tulacingo, Leon, and other districts, and there is sufficient to supply the world for centuries to come.

Coal, though less abundant, occurs in the States of Coahuila, Michoacan, Guadalajara, Oajaca, and especially Sonora. Here the Carboniferous area contains a bed of excellent anthracite, 30 miles long and from 5 to 16 feet thick, enough to supply the whole Pacific Coast for many decades.

Geological Formation

Although the whole land has been traversed and partly surveyed by many skilled mining engineers and other experts, its geological history has not yet been thoroughly elucidated. But in the higher ranges the prevailing formations are known to be very old plutonic rocks—granites, syenites, diorites, mineral-bearing porphyries, trachytes, basalts—in many places associated with sedimentary, archæan, and metamorphic masses. Metamorphic formations, partly perhaps upheaved, partly interpenetrated and overlaid by shales, greenstones,

silicious schists, and especially unfossiliferous limestones, enter largely into the fabric of the central plateau.

Horizontal and stratified beds, rare in the south, occupy wide areas in the north, where chalks and sandstones prevail in the Rio Grande and Rio Gila valleys. To these chalks and sandstones may perhaps be due the vast sandy wastes characteristic of the northern provinces, as well as of the conterminous States of Texas and New Mexico in the American Union. Such is especially the *Bolson de Mapimi*, a boundless rocky wilderness covering some 50,000 square miles in Coahuila and neighbouring districts.

The Mexican Volcanic System

Owing to a curious misuse of the term "volcan," which is locally applied to almost any lofty cone or eminence, burning mountains are popularly supposed to be as plentiful in Mexico as in Ecuador itself. Such is far from being the case, and in point of fact there appear to be not more than about a dozen true volcanoes in the whole republic north of Tehuantepec. Even most of these are either quiescent or extinct, and one or two alone can be described as active, using the expression in a somewhat elastic sense. All belong to a single system, which is disposed nearly in the direction from east to west between the two oceans, consequently transversely to the normal trend of both Sierra Madres. Like those of Java or Kamchatka, they seem to indicate a comparatively recent line of igneous fracture, which intersects the two main ranges about 19° N. lat. near the southern edge of the Anahuac plateau a little south of the city of Mexico. That they are of late formation, and rose above the volcanic fault long after the upheaval of the crystalline Sierras, is evident from their constituent elements—

obsidian, pumice, scoriæ, lavas, tuffs, and other modern eruptive matter, with great quantities of almost pure sulphur, thickly lining the inner sides of some of the not yet obliterated craters.

Notwithstanding, or because of, their recent birth, several of the cones tower some thousands of feet above the highest peaks of the Sierras, and at least two—Popocatepetl and Orizaba—are overtopped in the northern continent by the Alaskan Mount St. Elias alone. As shown in the appended table of altitudes north of Tehuantepec, where the volcanoes are distinguished by an asterisk (*), none of the crests of the Sierras reach 14,000 feet; hence they all fall below the snow-line, which, although very variable, scarcely anywhere descends much below 15,000 feet. How inconstant this factor is may be seen from the fact that during the ascent of Ixtaccihuatl by Dr. O. C. Farrington in the dry month of February 1896, the snow-line was not met lower than several hundred feet above La Cruz (14,100 feet), whereas in the wet season it descends nearly to the Tlamacas farmstead (about 12,800 feet).[1] Mr. Howarth contends that even on Popocatepetl there is no true snow-line, and that the snow-cap descending some 2000 or 3000 feet from the crater "is an extremely variable condition. There are occasions when even at 17,000 feet most of the snow disappears."[2] In general it may be said that all the higher cones are snow-clad for at least a great part of the year, their white mantle becoming very threadbare during the hot summer months.

Crests and Cones.	Height in feet.	States.
* Popocatepetl . . .	17,540	Mexico.
* Orizaba (Citlaltepetl) . .	17,360	Vera Cruz and Puebla.
Ixtaccihuatl	17,000 (?)	Mexico and Puebla.

[1] *Jour. Geograph. Soc.* 1898, i. p. 553. [2] *Ibid.* 1896, ii. p. 142.

Crests and Cones.	Height in feet.	States.
* Toluca.	15,019	Mexico.
* Colima	14,363	Jalisco.
* Ajusco	13,628	Federal District.
* Malinche	13,560	Tlaxcala.
* Cofre de Perote (Nauhcampatepetl)	13,415	Vera Cruz.
Zapotlan	12,743	Jalisco.
Tancitaro	12,467	Michoacan.
Zempoaltepec. . . .	11,141	Oajaca.
Pico de Quinceo . . .	10,905	Michoacan.
Guarda	9,731	Federal District.
* San Pablo	9,000	Valley of Mexico.
Veta Grande	9,140	Zacatecas.
* Tuxtla (San Martin) . .	4,920	Vera Cruz.
* Jorullo	4,265	Michoacan.

Popocatepetl—Ixtaccihuatl

Popocatepetl, culminating point of the Mexican highlands, stands some 14 miles south of the capital, nearly midway between the Atlantic and Pacific Oceans. It thus occupies the central position in the transcontinental line of fissure, about 454 miles long, which begins on the Atlantic side with Tuxtla and Orizaba, and passes westwards through Ajusco, Toluca, the recently upheaved Jorullo, and Colima on the Pacific Coast to the volcanic Revillagigedo Islands, 270 miles from the southern extremity of the Californian peninsula.

Popocatepetl was first ascended by Diego Ordaz in 1522, and soon after at Cortes's command by Francisco Montano, who was reported by Antonio Herrera, not a very trustworthy writer, to have been lowered down the crater to a depth of 500 feet. Since then the ascent has been made several times, the last in 1896 by Dr. Farrington, who found fumes escaping from six vents on the summit. The crater, sometimes described as 3 miles across and from 1000 to 2000 feet deep, has a

diameter of perhaps not more than 2700 feet, and is of unknown depth, but filled by great quantities of sulphur equal to the best obtained from Etna.

Although for some time quiescent, it is evident from contemporary records that the crater was in full eruption at the time of the Conquest. Bernal Diaz, one of

POPOCATEPETL FROM THE TERRACE OF THE PYRAMID OF CHOLULA, STATE OF PUEBLA.

Cortes's associates, tells us that "a great column of smoke rose straight into the air to a considerable height, and then spread out as a large cloud. With this smoke there was to be seen flame in various directions, red-hot stones being thrown up in great quantities and with violent explosions. The people were terrified, not at the smoke, which was of very common occurrence (and indeed still persists), but at the flames and red-hot missiles flying

out of the crater, which they had never seen or heard of before. They believed that the tyrants who had been cruel to them were being roasted in that volcano, and consequently they were terrified when they beheld these fiery tyrants flying out of the crater and spreading over the earth."[1] During the ascent by Ordaz also violent tremors were felt, accompanied by flames and missiles,

AMECAMECA AND THE VOLCANO OF IXTACCIHUATL.

so that his guides sought shelter in the clefts of the rocks. This statement is verified by the reference to large icicles which they brought back to Cortes, and have since been described by Mr. Howarth. Mention is made by Bernal Diaz of another great eruption in 1539.

Dr. Farrington also ascended the rugged slopes of the neighbouring *Ixtaccihuatl* to a height of nearly 15,000

[1] Quoted by Sir C. Markham in *Jour. Geograph. Soc.* 1896, ii. p. 153.

feet. Although connected with Popocatepetl by a pass or saddle 12,000 feet high, over which Cortes made his way into the Valley of Mexico, the "White Woman," as the name is explained, does not belong to the transcontinental rift system; nor is it, strictly speaking, a volcano at all. Mr. Howarth, who also ascended Ixtaccihuatl to the snow-line, describes it as a huge mass of ancient

MAGUEY OR PULQUE RANCHE, WITH VIEW OF MALINTZI[1] VOLCANO.

porphyritic rock, like that of the western Sierra Madre, generally without any indications of erupted matter corresponding to that of the volcanic system. The external structure is quite distinct, the slopes being deeply serrated into precipitous canyons separated by lofty porphyritic ridges. Ixtaccihuatl would, however, appear to be several hundred feet higher than is generally supposed—Mr. Howarth thinks fully 17,000 feet

[1] Malinche.

—and is described by recent visitors as far surpassing its companion in grandeur, its sharp, rugged outlines, precipitous escarpments, and deep narrow gorges giving it a peculiarly wild and imposing aspect. According to an Aztec legend, Popocatepetl and Ixtaccihuatl are the parents of *Malinche* (*Matlalcueyatl*), a derelict maiden, who, after long wanderings over the plains, at last found a resting-place on the Tlaxcala plateau.

Orizaba

From the summit of Malinche, later known as *Doña Marina*, from Cortes's faithful companion and interpretress, a clear view is commanded of Orizaba (Citlaltepetl, the "Star Mountain"), one of the loveliest and most symmetrical cones in the world. Though situated some 70 miles inland its snowy summit is visible to ships for a distance of nearly 200 miles in clear weather. Orizaba has been quiescent since 1856; but its crater is easily detected from a long way off, its point being truncated in a south-easterly direction. Towards the north it inclines at an angle of 45°, resting on a rocky base, above which the slopes rise in terraces to its snowy peak. On the northern slope a narrow ravine winds through rocks of diorite and phonolite, while west of the Xamapa barranca rises a sheer wall of basalt, where the traces of volcanic eruptions begin to be more abundant. Here are everywhere met lava streams, scoriæ, and quantities of obsidian, pumice, and weathered trachytes. The irregular elliptic crater is said to be about 8300 feet across its longer axis, the whole circumference measuring some 20,000 feet.

The inner walls of the crater, consisting of blackened rocky ledges, betray no signs of present or recent activity,

although vapours rise from several vents round the outer lip, where are also seen deposits of pure crystalline formation. Lava streams, consisting mainly of basaltic masses, have undoubtedly been discharged from time to time, although few traces of them can now be detected on the oak and pine-clad slopes of the mountain.

Cofre de Perote—Jorullo

Like Orizaba the *Cofre de Perote* is also visible from the Gulf of Mexico. This is the *Nauhcampatepetl*, or "Four-crested Mountain" of the Aztecs, its Spanish name—"Coffer" or "Chest"—having reference to the square form of its summit. Both the crater and several parasitic cones on its flanks are extinct and partly even obliterated, although the lavas descending towards the coast show that it was in eruption in relatively recent times. On the west side is the famous *Chinacamote* Cave, said to be 18 or 20 miles long, but of difficult access, the entrance being encumbered by large blocks which have fallen from the roof.

In the western section of the volcanic rift the loftiest member of the system is the still restless *Colima*, a conspicuous object near the coast of Jalisco due east of Manzanillo. But *Jorullo*, although one of the smallest is, at least on historic grounds, the most interesting of all the active or quiescent cones. The local report that it suddenly rose above a cultivated plain one night in December 1759 may be dismissed as fabulous, although long widely credited on the authority of Humboldt. Apart, however, from this legend, the aspect of Jorullo is remarkable enough, the highest crater being flanked by several others on both sides, all of which have been simultaneously or

alternately in a state of commotion for about a hundred years. But since 1860 the central crater has been almost absolutely quiescent, while the *hormitos* ("little furnaces"), as the numerous secondary vents are called, have, for the most part, ceased even to emit hot vapours. When visited by Mr. Howarth in 1885 Jorullo was found to be in a state of complete quiescence, although, undoubtedly, in full activity in and for many years subsequent to 1836. But there is no valid reason to suppose that in its formation it differs from all other volcanoes, which have been slowly built up with the lavas and scoriæ accumulating at each successive discharge.

Earthquakes

As a rule the area of earth tremors is confined to the region of the great volcanic fissure. Here the shocks, which appear to be most frequent in the State of Jalisco, are propagated in the direction from east to west along and about the line of the transcontinental rift. Towards the middle of the nineteenth century, and somewhat later, the earthquake waves were often severely felt in the central region of the Valley of Mexico, which for the last three decades has been rarely visited by these underground disturbances. Mr. Howarth remarks that "they have become very much less frequent and very much less serious ever since artesian wells were sunk in the valley," apparently suggesting some relation of cause and effect between these works of man and the forces of nature. What seems better established is the coincidence between the earthquake zone and the volcanic fault in Central Mexico.

Hot Springs—The Bramidos of Guanajuato

Associated with the volcanic phenomena of the central regions are the hot and tepid springs which well up in many districts. Specially noteworthy are the *Aguas de Comangillas* of Chichimequillo near the rich Guanajuato silver mines, 6400 feet above sea-level. Some of the springs have a mean temperature of 205° Fahr., and whenever a hole is dug within a circuit of 130 yards the water bursts out from many parts of the spongy soil.

At the southern foot of Mount Cubilete, 6546 feet above the sea, thermal streams flow from some porphyry breccia resting on micaceous dolerite. The water has a mean temperature of 106° Fahr., is tasteless, perfectly clear, and when cool precipitates a light yellow sediment. Close to Istapan there are several mineral springs which rush up with such violence that in one place a volume of water thick as a man's body rises 2 feet above the ground. It has a temperature of 80°, and contains sulphate of soda and carbonate of lime, deposited along numerous little rills in such a way as to form hard incrustations between which the stream flows in a clear current.

Remarkable also are the hot sulphur springs of *Atliaca*, 7 miles below Mirador in the direction of Vera Cruz. Others occur at Guadalupe and Peñon de los Baños, which contain common salt, iron, carbonic acid, sulphate of soda and calcium chloride (fixed sal ammonia).

A singular phenomenon is presented by the *Bramidos* of Guanajuato on the central plateau some distance from the still active volcanoes. Here was heard in January 1784 a low rumbling noise like thunder, which con-

tinued for the space of a month, varied with a few short peals, but unaccompanied by any tremors. This underground thunder, from which the terrified people fled in alarm, gradually died away, nor has it since been repeated.

In general the mineral springs, though very numerous, and possessing valuable medicinal properties, are little frequented even by the natives. This is due to the fact that they are for the most part situated in rugged upland districts of difficult access.

CHAPTER IV

MEXICO—*continued*

Hydrography—Rio Grande del Norte—Rio Lerma—Rio Mexcala—Rio Panuco—The Coast Lagoons—The Closed Basins of the Anahuac Plateau—Drainage Works of the Valley of Mexico.

Hydrography—Rio Grande del Norte

FEW tropical lands are less favoured by nature with navigable or even fertilising waters than Mexico. Apart from the *Rio Bravo* (*Rio Grande del Norte*), which forms the boundary towards the United States for several hundred miles, and the *Colorado*, which penetrates for a short distance into the republic at the head of the Gulf of California, there is not a single river much over 600 miles long, or accessible to sea-going vessels for 50 miles above its mouth. Even the Bravo has become quite shallow in the dry season, since its upper course has been tapped for irrigation purposes by the settlers in the States of Colorado and New Mexico, and is, consequently, now little used as a water-way even in the lower reaches. Higher up it was never available for any kind of navigation, as might indeed be inferred from its very name of *Bravo*, which, in Spanish, has often, as in this instance, the meaning of "wild," or "savage." The reference is to the wild gorges and

swirling rapids over which it forces its way from an altitude of some 13,000 feet in the Sierra San Juan for hundreds of miles down to sea-level at Matamoros.

The section of its catchment basin within the Mexican frontier has, no doubt, a vast area considerably exceeding 90,000 square miles. But this basin lies mostly in the arid and almost rainless provinces of Chihuahua and Coahuila, which are unable to send a single copious affluent to the right bank of the Rio Bravo. Few of them are even perennial, running dry after the rains are over, and the largest—the *Rio Conchos* from the western, and the *Salado* and *San Juan* from the eastern Sierra Madre—become sluggish saline streams as they approach the main artery, to which they impart a slightly brackish taste.

Rio Lerma—Rio Mexcala

In the rest of the republic the development of large rivers is prevented, partly by an insufficient rainfall, and partly by the disposition of the two Sierra Madres, which transform a great part of the central plateau to a closed basin with no present seaward outlet, while they run too near the Atlantic and Pacific shores to leave room for the formation of any considerable coast streams on the intervening strips of seaboard. Hence those few rivers alone acquire any amplitude which have their sources on the great tableland itself, and force their way thence through the barriers of the Sierras either westwards to the Pacific or eastwards to the Gulf of Mexico. Such are, on the west side, the *Lerma* and the *Mexcala*, and on the east the solitary *Rio Panuco*. All the rest, rising on the outer slopes of the two ranges, are mere coast streams, with short rapid courses, mountain

torrents in the upper reaches, often flowing lower down in deep rocky beds, and mostly obstructed by bars at their mouths, hence of little use either as waterways or irrigating arteries.

The Lerma, which is so called throughout its upper course from the marshy lagoon of that name where it has its source at the foot of the Toluca volcano in the State of Mexico, traverses the States of Michoacan and Guanajuato to the already described Lake Chapala in a north-westerly direction. Crossing the north-eastern angle of this basin, the Lerma, which now becomes the *Rio Grande de Santiago*, 12 miles below its entrance into the lake carves itself an outlet through a profound barranca on the north bank, and thus maintains its north-westerly trend through the State of Jalisco to the Pacific Coast about 20 miles above San Blas, over against the little archipelago of *Las Tres Marias*. Its chief affluents, all of which reach its right bank from the central plateau, are the *Rios Laja* and *De Leon* above Lake Chapala, and lower down the *Rios Verde* and *Bolaños*. Of these the most copious appears to be the Verde, which is formed by the junction of the *Rio d'Aguas Calientes* and *Rio de Lagos* headstreams. Despite a total length of about 620 miles, the Lerma has such a swift current above Chapala, is so beset with reefs and falls below the lake, and lower down so shallow in the dry season, that it is nowhere available for navigation throughout the year.

As shown by its alternative name, *Rio de las Balsas*, "River of the Rafts" or "Barges," the Mexcala is locally regarded as, to a modest extent, the one navigable stream on the west side of the republic. But there are shallow bars at the mouths of the two channels through which it enters the Pacific some miles south of Manzanillo. A

section of about 225 miles in a total length of 500 miles is also encumbered at frequent intervals by reefs, rapids, whirlpools, and other hindrances, so that the reaches open to flat-bottomed craft do not amount to much. Nevertheless the Mexcala is a large and even copious stream, ramifying with numerous affluents through the States of Mexico, Puebla, Oajaca, Queretaro, and Michoacan, and discharging through its delta a volume estimated at 2500 cubic feet per second.

Rio Panuco

On the Atlantic side by far the largest fluvial basin is that of the *Rio Panuco*, also called the *Tampico*, from the seaport where it reaches the Gulf of Mexico about midway between Matamoros and Vera Cruz. Here it is now joined from the north by the *Tamesi*, which formerly flowed in a separate channel to the gulf. The united streams drain a great part of Tamaulipas and Vera Cruz, and even a portion of the State of Mexico, through the so-called *Rio Montezuma*, that is, the *Tula*, which receives some of the overflow from the lakes in the Valley of Mexico through the *Huehuetica* cutting. On its winding course to the Panuco, of which it is the chief headstream, the Tula makes a great bend round to the west, thus enclosing the Hidalgo heights and collecting numerous contributions from Queretaro.

On their precipitous course through the rocky ramparts of the eastern Sierra Madre, some of these affluents become entangled in the upland gorges, plunging over foaming cataracts, and often suddenly disappearing in profound barrancas. Thus are developed in some places the so-called *Puentes de Dios*, "God's Bridges," such as that of the Rio San Juan in Nuevo Leon, where

the stream is hurled into a yawning chasm from a height of 200 feet. Still more romantic are the famous *Falls of Regla* in the State of Queretaro, where the mountain torrent rushes over a breach in a huge mass of bluish basalt columns draped with festoons of trailing plants, and topped with tall nopals of eccentric form, which, at a distance, look like gaunt sentinels keeping guard at the entrance of the weird mountain gorge.

The Coast Lagoons—Rio Coatzacoalcos

From the Hidalgo and Queretaro uplands the Panuco washes down great quantities of sedimentary matter, which has filled in the coast lagoons about the estuary. These lagoons formerly extended round the Gulf of Mexico from the Mississippi delta with few breaks all the way to Vera Cruz, and presented continuous chains of brackish water-ways communicating with the gulf through narrow passages, which, like those fringing the shores of Upper Guinea, were kept in a constant state of flux by the winds, rains, and marine currents. At present the lagoon formations are interrupted at several points by the alluvial matter brought down and deposited in the shallow waters by the *Tigre*, the *Marina*, the *Rio de las Palmas*, and other coast streams between the Rio Bravo and the Panuco.

Immediately south of the Panuco estuary is developed the great *Laguna de Tamiahua*, quite a little inland sea studded with islands, and enclosed by a long cordon of narrow dunes, which present the peculiarity of being disposed convexly to the Gulf. Here the strip of sand projects considerably beyond the concave shore-line, terminating at the low but conspicuous headland of *Cabo Rojo*, "Red Cape."

Farther south the lagoon formations disappear, and the uniformity of the low-lying sea-board is broken only by the channels of a few insignificant fluvial estuaries. The Tehuantepec Isthmus, however, which takes its name from the *Rio Tehuantepec*, a little Pacific Coast stream mostly blocked by sands, is traversed on the Gulf side by the not inconsiderable *Rio Coatzacoalcos*. But for its dangerous bar, not more than 12 or 14 feet deep, the "Snake River," as its Aztec name is interpreted, would be accessible to large sea-going vessels to Minatitlan, 26 miles from the estuary, and for small craft 35 miles farther inland. Thus the Coatzacoalcos, which is about half a mile wide in its lower course, penetrates nearly half across the isthmus, and has naturally attracted the attention of engineers occupied with the project of a ship-canal between the two oceans. In recent years the Tehuantepec route appears to have lost favour, chiefly owing to the dangerous nature of the bar, though also perhaps for political and economic reasons.

As above seen, there are no surface streams in Yucatan, while those of Chiapas and Tabasco belong to the Central American water system, and will best be described in the section devoted to the republic of Guatemala, where they take their rise.

The Closed Basins of the Anahuac Plateau

Besides Chapala and the other lakes of the western Sierra Madre draining to the Pacific, there are others, mostly of small size, which occupy depressions on the central plateau, and have no seaward outflow. These closed basins are numerous, especially in the Bolson de Mapimi wilderness, but are for the most part merely shallow saline expanses periodically flooded by rivers

which are no longer copious or vigorous enough to reach the arteries through which they formerly found an outlet to the Gulf of Mexico. Such are the *Guzman lagoon* fed by the *Rio Casas Grandes* in Chihuahua, near the northern frontier; the *Tlahualila lagoon*, largest of the saline depressions in the Bolson de Mapimi; and in the State of San Luis a large number of little tarns or ponds surrounded by thick incrustations of saltpetre or carbonate of soda and other efflorescences.

Drainage Works

But none of these lacustrine groups can compare in historic or hydrographic interest with those of the Valley of Mexico, which from them takes its Aztec name, *Anahuac*, that is, *Anal-huatl*, "Amid the Waters." Here is a chain of six small and shallow basins, which have been the cause of more trouble and expense to the city of Mexico than perhaps any other body of water has been to any other city in the world. Yet they represent the merest residuum of a great inland sea, which in pre-Aztec times flooded the whole valley, had an area of some 2220 square miles, was of nearly circular shape, with a mean diameter of 55 miles, and sent its overflow by the Acatlan breach in the encircling hills through the Tula (Montezuma) head-stream of the Rio Panuco to the Gulf of Mexico.

But with the change of climate in the direction of greater dryness, a change still going on, the inland sea gradually subsided far below the level of the outlet, and thus became, like Titicaca, a completely closed basin, of which nothing now survives except the six lagoons—*Texcoco*, flooding the lowest depression of the valley; *Xochimilco* and *Chalco*, 3 miles farther south and 6 or 7

feet higher; *Zumpango*, *Xaltocan*, and *San Cristobal* extending the chain northwards to an elevation of 13 or 14 feet above Texcoco.

When the conquering Aztecs penetrated from the north into the valley, they founded their new capital, Tenochtitlan, partly on an eminence, partly on floating islands in the Texcoco lagoon itself. Like all the other basins, this lagoon was at that time considerably larger than at present, as shown by the fact that the modern city of Mexico, which occupies the very site of Tenochtitlan, now stands on dry land some distance to the west of the lagoon. Being at the lowest level, Texcoco also received the overflow from the other basins, some of which were kept fresh by the copious torrents from the surrounding hills, while others were saline and imparted a brackish taste to Texcoco. To obviate this inconvenience, the emperor Netzahualcoyotl constructed in 1450 a great dyke to divide the fresh from the saline lagoons, and other causeways were built by the Aztecs to 'dam up the flood waters discharged from the north and south during the rainy season. Some of these were vast structures 4 or 5 and even 10 miles long, and were utilised by Cortes when attacking the Aztec capital. But not understanding their practical purpose, he had some of the dykes cut, with the result that the new Spanish city which replaced the floating islands was soon found to be below the mean average level of the lake.

Thus arose the great drainage difficulties which it has taken nearly four centuries to overcome. The first serious attempt to prevent the constant inundations, in one of which as many as 30,000 people are said to have perished, was made in 1607-8 by the engineer Enrico Martinez, who intercepted the flood waters by several

canals and discharged them to the Tula river through a tunnel over 5 miles long excavated under the Acatlan breach over which the inland sea found an outlet in prehistoric times. But the tunnel not being properly faced with brick or stone soon became choked with the erosions of the rushing waters, and was also damaged by an earthquake in 1637. It was, however, to some extent restored and improved in 1789, and the Tajo de Nochistongo (Huehuetoca), as the cutting was called, had at least the result of preventing any serious inundations since that time.

But as the waters continued to subside the miasmatic exhalations from the bed of the lagoon, saturated with the sewage of many generations, continued to increase, and Mexico, despite its magnificent climate and great elevation above the sea, became one of the most unhealthy places in the world, the mortality averaging 40 per 1000 in recent times. Hence the problem now was, not so much how to prevent the inflow of the flood waters, as how to get rid of the town sewage, although the risk of sudden freshets was still by no means obviated.

Hence the whole question had to be reconsidered, and a project having the twofold object of carrying off the waters of the lagoons and the sewage of the capital was at last taken in hand in 1885, and practically completed in 1899 at a total expenditure of £4,000,000. This great work, which is justly regarded as one of the triumphs of modern engineering, deals comprehensively both with the town sewage and with the flood waters of the valley, all of which are discharged by a canal 43 miles long through a tunnel over 6 miles long to the Rio Tula. The tunnel is ventilated by as many as twenty-five shafts, one of which pierces the Acatlan

saddle to a depth of 302 feet, and this new outlet to the Tula has a maximum discharge of 636 cubic feet per second. The canal, which has an average depth of about 20 feet, receives the flood waters of Texcoco, and also communicates with the network of city sewers, and has the same maximum capacity as the tunnel. It runs at first from the San Lazaro station of the Hidalgo Railway between the Guadalupe hills and Texcoco, and then turns north, traversing the San Cristobal, Xaltocan, and Zumpango lagoons to the mouth of the tunnel at the village of Tequixquiac, where the outflow is regulated by a sluice.

CHAPTER V

MEXICO—*continued*

Climate—Vertical Zones of Temperature—Flora—Agricultural Resources—Fauna—Fauna of the Revillagigedo and other Insular Groups—Domestic Animals—Stock-breeding.

Climate—Vertical Zones of Temperature

ALTHOUGH Mexico is intersected by the Tropic of Cancer, and stretches across eighteen degrees of latitude, such is the peculiar conformation of the land that its climatic conditions are determined far more by altitude than by its distance from the North Pole or the Equator. Thus the city of Mexico, in 19° 31′ N. lat., but standing 7430 feet above sea-level, enjoys a much more genial climate—cooler in summer and warmer in winter—than New York or Chicago, which lie some 1400 or 1600 miles nearer the Pole, but either at sea-level or little above it. These contrasts, due to the great elevation of the central plateau with its lofty flanking Sierras falling precipitously towards both oceans, are specially marked in the section of the land which is situated within the Torrid Zone. This section may be taken as the typical region of vertically disposed climates, which were here first studied, and are more sharply outlined than in most other lands. The conditions prevailing in the three

superimposed zones, as distinguished by most observers, although there are really four, may thus be conveniently tabulated :—

Climatic Zones.	Mean Range of Height.	Mean Range of Temperature.
Tierra Caliente (Hot Zone) . .	0 to 3000 ft.	77°–82° F.
Tierra Templada (Temperate Zone) .	3000 to 5000 ft.	62°–70° F.
Tierra Fria (Cold Zone) . . .	7000 to 9000 ft.	58°–64° F.

Above the Tierra Fria the uplands penetrate in the highest peaks to altitudes of from 16,000 to 17,000 feet and upwards, and constitute an *Arctic Zone*, which, being mostly uninhabitable, is not taken into account. Yet its influence is considerable in modifying the relations lower down, by intercepting the moisture-bearing clouds from the two oceans, by sheltering the tablelands from cold winds in winter, and tempering the summer heats with refreshing breezes from the higher slopes.

From this general exposition, it follows that what is here called the "Cold Zone" is really a temperate region, the most thickly peopled and best cultivated in the republic, and enjoying one of the most delightful and healthiest climates in the world. Although for local reasons the capital has hitherto been a fever den, the whole region is highly favourable to the European constitution, and Mr. T. U. Brocklehurst speaks of people rivalling in longevity the centenarians of the Minas Geraes uplands in South Brazil.[1]

If the Tierra Fria is a temperate, the Tierra Templada may be described as a sub-tropical zone, comparable somewhat to that of the Mediterranean lands. As in Italy and Algeria the orange, fig and olive thrive amid wheat and maize fields, so in the State of Oajaca these same cereals are found in close proximity with sugar-cane

[1] *Mexico To-Day*, 1883. He mentions the case of a woman 134 years old, whose age "was attested by church register!" (p. 16).

plantations and banana groves. In this Tierra Templada are comprised all the higher terraces and parts even of the central plateau itself. Thanks to the slight range of the temperature, scarcely more than 4° or 5° F. from season to season, extremes of heat and cold are unknown, and the climate, if less invigorating, is scarcely less healthy than that of the upper zone. The escarpments of the Sierras are high enough to capture some of the moisture rising from the neighbouring seas, and this moisture is precipitated during the *invierno*, that is, the wet summer months, in copious showers. Hence subtropical growths flourish everywhere, and help to retain the moisture in the ground throughout the *verano*, that is, the dry winter season.

From the Tierra Templada down to the sultry and too often fever-stricken lowlands comprised within the Tierra Caliente, the transition is in some places almost instantaneous. Indeed the change is sometimes felt even in the Temperate Zone, where certain sheltered districts above 3000 feet are even hotter than the more exposed seaboard itself. But torrid heats prevail generally on all the sandy and marshy coast-lands of the Gulf and the Pacific, and although the mean range of the temperature is slight, the glass may often rise to 100° or even 104° in the shade, as in the torrid districts of Vera Cruz on the east and Acapulco on the west side. Yet even here the atmosphere is constantly refreshed by the night breezes, and in summer by the rains, which prevail from June to November, and fall regularly and at fixed intervals from about one to three hours daily. After the showers the atmosphere becomes clear and pleasant, at least in well-drained districts.

Unfortunately many districts, especially along the low-lying Vera Cruz and Tabasco sea-board, are not

drained at all, and here both yellow fever and black vomit are endemic. These terrible scourges, varied in the marshy tracts by troublesome intermittent agues, visit all the shores of the Gulf during the summer months, and range also to the West Indies, but are unknown on the Pacific Coast in the same latitudes. They have been attributed to the putrefaction of innumerable molluscs and other low organisms on the beach, though the recent experiences of the Americans in the cities of Cuba leave little doubt that insanitary conditions have much to do with the prevalence of yellow fever. But for the fierce *nortes*, which constantly sweep the Gulf, dissipate the pestilential exhalations, and renovate the atmosphere, the coast-lands from Tampico to Campeche would scarcely be habitable.

Even in Yucatan miasmatic vapours hover about the stagnant waters which still flood the tanks and reservoirs constructed by the ancient Mayas in the natural depressions of the limestone plateau. Strange to say, despite the general dryness of the surface, and the exposed position of the land, the whole of Yucatan is a sickly region, dreaded by the Mexicans of the uplands almost more than any other part of the republic. Besides occasional visits of yellow fever, all kinds of pulmonary affections are endemic, and even hereditary amongst all classes of the population.

Reference has already been made to the increasing dryness of the climate. Symptoms of this tendency are perceptible in those regions of the plateau which have suffered most from the reckless destruction of the forests. And while the rainfall grows less the cold becomes more intense. "Mexico is not only suffering from an annual decrease in rainfall, owing to the continual decrease in the timber-bearing area, the rainfall being more and

more unequal every year during the past twenty years, but the winters are becoming more and more severe, and the frosts are reaching farther and farther south each year. This is undoubtedly due to the wholesale destruction of timber now going on throughout the republic" (Romero, p. 66).

Subjoined is a table of meteorological observations resulting from the records for five or six years at various places between the United States' frontier and Tehuantepec :—

Towns.	N. Lat.	Height.	Temperature (Mean).	Rainfall.
Monterey	25° 40′	1640 ft.	70° Fahr.	138 inches
Saltillo	25° 25′	5275 ,,	63° ,,	20 ,,
Culiacan	24° 48′	115 ,,	78° ,,	5 ,,
Mazatlan	24° 11′	15 ,,	76° ,,	40 ,,
Zacatecas	22° 46′	8120 ,,	58° ,,	20 ,,
S. Luis Potosi	22° 9′	6235 ,,	62° ,,	16 ,,
Aguas Calientes	21° 53′	6120 ,,	66° ,,	22 ,,
Leon	21° 7′	5925 ,,	65° ,,	36 ,,
Guanajuato	21° 1′	6650 ,,	63° ,,	34 ,,
Guadalajara	20° 40′	5184 ,,	72° ,,	34 ,,
Queretaro	20° 25′	6090 ,,	65° ,,	24 ,,
Pachuca	20° 7′	8100 ,,	56° ,,	17 ,,
Mexico	19° 26′	7430 ,,	60° ,,	30 ,,
Colima	19° 13′	1660 ,,	78° ,,	42 ,,
Puebla	19° 03′	7120 ,,	60° ,,	40 ,,
Tlacotalpam	18° 16′	19 ,,	78° ,,	90 ,,
Oajaca	17° 04′	5110 ,,	67° ,,	37 ,,

Flora—Agricultural Resources

Thanks to the vertical arrangement of its climatic zones, the general fertility of its soil, and a fairly abundant rainfall on all the escarpments of the plateaux, Mexico possesses an extremely diversified native flora, and is also capable of growing all the economic plants of the world almost in juxtaposition. Thus the Southern

Railway ascends in a few hours through a series of fertile terraces, from a tropical land of coco-nut palms and bananas in Oajaca, 1700 or 1800 feet above the sea, to the Puebla plateau, 7000 feet high, where the plains are covered with waving fields of wheat and maize. Such

GREAT AHUEHUETE TREE (TAXODIUM) AT SANTA MARIA DEL TULE, STATE OF OAJACA (INSCRIBED WITH NAME OF HUMBOLDT, AND STATED BY HIM TO BE SECOND LARGEST IN THE WORLD).

also is the equable character of the climate, that in many districts field operations are carried on all the year round, and the traveller is bewildered at the spectacle of corn just sprouting from the ground, yellowing for the sickle, and being trodden out by mules on the threshing-floor.

Botanists are still busy classifying this exuberant vegetable kingdom, in which are intermingled many of

the forms peculiar to the northern and southern continents. They have already described as many as one hundred and fourteen species of trees, such as oaks, pines, firs, cedars, rosewood, and mahogany, valuable for building and cabinet work; seventeen of oleaginous plants, including the olive, sesame, almond, coco, and balsam of Peru; about sixty classed as medicinal; twelve of dyewoods; eight gummiferous and resinous, yielding rubber, copal, camphor, mezquite (a substance like gum-arabic), and gum-sandarach. Most of these are indigenous forest growths, needing no special cultivation, while others, such as the coco-nut palm and banana, are exotics thoroughly acclimatised, and almost running wild. Of the banana, whose commercial value is steadily increasing, native authorities enumerate about twenty species, one yielding a gigantic pod 15 inches long and 9 inches round, said to be of the very finest flavour. With these may be classed the mulberry, which has found in Mexico a congenial home, and promises well for the future development of the silk industry.

Amongst the economic plants, alimentary and industrial, but all needing cultivation, the most important are coffee, sugar-cane, tobacco, cotton, agave, henequen, coco, vanilla, rice, yucca, alfalfa, beans, maize, and the pine-apple.

Coffee, which has a wide range from sea-level to 6000 feet, but thrives best between 1000 and 5000 feet, has already attained a great development, and is still expanding, especially in the districts of Cordoba, Huatusco, Oajaca, Tabasco, and Soconusco (Chiapas). In 1897 the total production exceeded 3,000,000 cwts. The soil and climate are also well suited for the sugar-cane, which may be profitably cultivated almost anywhere between 3000 and 5000 feet, but succeeds best on the lowlands.

In Soconusco and some other districts the cane attains a height of 12 feet, and lasts from ten to eighteen years, whereas in Louisiana and the Antilles it needs replanting every three or four years.

Tobacco, said by some connoisseurs to have a finer aroma than the choicest Havana, was introduced from Cuba after the insurrection of 1869, and has since made some progress. The crop exceeded 16,000 tons in 1898, when the quantity exported was valued at £900,000. Cotton also is of the finest quality; but the yearly production is limited to about 30,000 tons. This is scarcely half the quantity required by the local factories, so that the other half has to be imported from the United States.

Of the agave (American aloe) there are several varieties used for several purposes. The most important is the *mague* (*Agave mexicana*), which grows wild on the uplands, and is largely cultivated, especially on the Plains of Apam, an extensive district comprising parts of the States of Mexico, Puebla, and Hidalgo. From this plant is obtained the national beverage, *pulque*,[1] by a process of fermentation dating from Aztec times. Pulque contains scarcely more than 7 per cent of alcohol, yet is highly intoxicating if drunk too freely. But taken in moderation it appears to be an excellent tonic and even nutritive; hence is almost indispensable to miners working at high pressure in a hot, close atmosphere. Another variety of the agave, cultivated chiefly in the State of Jalisco, yields the so-called *mescal*, a drink said to possess some remarkable therapeutic properties.

[1] This is an Araucanian word, which has travelled all the way from Chili to replace the proper Aztec term *octli*. How the substitution came about has not been made clear, but may have been made because *pulque* lent itself better to such Spanish derivatives as *pulquero*, *pulqueria*, pulque-dealer, pulque-tavern, etc.

But far more valuable is the *henequen* variety of the aloe, from which is obtained a strong cordage largely exported to the United States and England. The plant thrives best in a dry, stony soil near sea-level, hence is cultivated exclusively in Yucatan, of which State it forms the chief industrial resource. From Sisal, the port where the fibre is shipped, it is known in the trade as "Sisal hemp." The price has increased sixfold since the beginning of the nineteenth century, and as the plant requires little cultivation, while a single acre will yield as much as 1000 or 1200 lbs., the industry has been rapidly developed in recent years. In 1898 the crop exceeded 550,000 tons, and the quantity exported was valued in that year at £2,400,000.

Rice, maize, and wheat are also extensively cultivated. But few other economic plants are of much present importance. Even the cactus, on which the cochineal feeds, has lost much of its value, since the scarlet and carmine dyes yielded by that insect are now mostly replaced by the much cheaper aniline products of modern chemistry. On the other hand the *chicle* industry has been greatly developed since the taste for this chewing-gum has spread throughout the United States. In the forests where the plant grows wild a larger area is worked every year, and although the price has advanced from about fourpence to nearly two shillings a pound, the quantity exported, entirely to the Union, rose from £30,000 in 1885 to over £320,000 in 1898.

A great future seems also reserved for cacao, which flourishes between 300 and 1000 feet, and attains such perfection in Soconusco that in colonial times the Court of Madrid was supplied exclusively from this district. This plant, which is indigenous in Mexico,

takes its name from the Aztec *cacauatl,* and is the *Theobroma cacao,* from the bean of which chocolate

CACAO.

is prepared. Hence it is not to be confused either with the *coco-nut* palm, which is an exotic in the New World, or with the *coca* shrub (*Erythroxylon coca*), which is

indigenous in South America and yields a tonic much prized by the Peruvian aborigines. Vanilla, which ranges over both continents, flourishes especially in the low-lying districts of the Gulf States. The Vera Cruz bean, which yields a well-known essence, commands the highest market price. But vanilla culture has the drawback that it can be profitably carried on only in hot, moist regions subject to visitations of yellow fever and to endemic recurrent agues. Rice has, on the other hand, the great advantage that it can be cultivated in Mexico on dry ground, which does not need to be periodically flooded. "It is generally planted just as wheat and barley are in the United States, needing no irrigation and depending entirely on the rainfall" (Romero, p. 53). In 1898 the rice crop was estimated at nearly 50,000 tons, all required for the local consumption. Some attention is now also paid to yucca, ginger, alfalfa, and orange culture, for all of which the country is well suited. Like the cassava (mandioc, manihot) of South America, the yucca yields by pressure a nutritious starch or flour, which, when purified, is the tapioca of commerce. Yucca is originally a Peruvian (Quichua) word now current in the southern United States, and in Mexico, where it has formed an important article of diet from remote times. The quantity of food obtained from yucca-culture is said to rival that of the banana itself, the yield, acre for acre, being sixfold that of wheat. Till lately alfalfa, which grows wild almost everywhere on the dry plateaux, was entirely neglected and not even used as fodder for cattle. The very land suited for its growth was considered worthless, until the discovery was made a few years ago that in Lower California American speculators were buying up the tracts covered with this tall coarse grass at £20 an

acre. Since then it has acquired a commercial value in other parts of the republic, and is now exported in increasing quantities to the paper-mills of the United States.

But no economic plant can rank in importance with the haricot bean and maize, which yield the staples of food, and jointly constitute the universal dish of *frijoles* and *tortillas*. In Mexico maize must be even more productive than the yucca, for two annual crops are raised each averaging 60 bushels to the acre. This cereal being most exhausting to the soil, it might be supposed that its fecundity must be greatly reduced after 1200 years of cultivation, for the Aztecs have a tradition that it was introduced with cotton by the Toltecs in the seventh century. But there is no sign of exhaustion on the plateaux, where the volcanic hills are thickly strewn with potashes and other rich chemical substances. These fertilisers are continually washed down to the bottom lands by the gentle summer rains, and thus the ground is perpetually renewed by a sort of automatic process. In 1897 the maize crop was officially estimated at 70,000,000 bushels, raised by somewhat primitive methods, and limited by the local demand. With improved appliances and capital the crop could easily be increased tenfold.

On their march to the plateau the Spaniards found the pine-apple exposed for sale in all the towns along the route. It had been traditionally introduced by the Toltecs, and cultivated in the district of Amatlan, whence the Aztecs obtained their chief supply. Now it is extensively grown in the tropical and some of the temperate lands up to 3000 or 4000 feet, and in many places a good wine as well as vinegar are prepared from the juice. But almost more valuable is the leaf, which

furnishes a fibre of great strength and fineness, manufactured into cables, ropes, twine, mats, hammocks, and paper. A pine-apple rope 3 or 4 inches thick will lift a weight of nearly three tons, yet from the same fibre is woven a textile fabric as fine and beautiful as silk, and the Zapotec Indians still make a cloth which is a mixture of pine-apple thread and wild silk.

Fauna

In respect of its fauna, taken as a whole, Mexico is commonly described as a land of transition between the northern and southern continents. The statement is necessarily true of those forms, such as puma, jaguar, ocelot, wild cat, raccoon, opossum, and cariacus (American deer), amongst mammals, turtles, alligators, rattlesnake and some other reptiles, humming-bird and some lower organisms, all having a range now or formerly coincident with the greater part of the New World. But the presence of bears, wild boars, and even bisons in the northern provinces, besides beavers, martens, skunks, squirrels in many places, shows that zoologists are justified in regarding Mexico as a subdivision of North America, at least in respect of its mammalian fauna. But there are numerous overlappings and intrusions from the south both of mammals, including the tapir and five varieties of monkeys, and of reptiles, such as the boa in the southern forests, and the iguana, which is valued as an article of food by some of the aborigines. From the south also, no doubt, came the porcupine, the armadillo, the *saltillo*, or darting-snake; the *centoatl*, another ophidian whose skin has the property of shining in the dark, and a host of small pests, such as the jigger, *rezno* (tick), *temahuani* (a poisonous worm), and

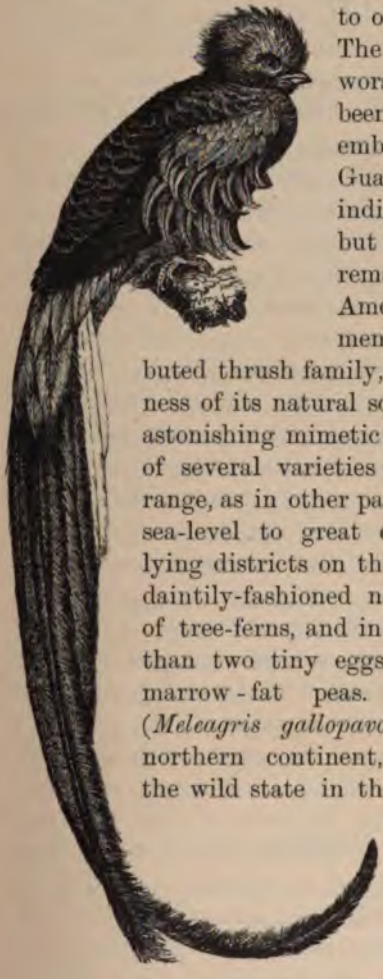
many others, superadded to the ubiquitous ants and mosquitoes, but mostly confined to the Tierra Caliente. Highly characteristic is the *axolotl* (*Siredon pisciforme*), an amphibious lizard which appears to have been evolved in the lacustrine district of the Valley of Mexico, and forms a sort of connecting link between gill- and lung-breathing animals. It is from 10 to 15 inches long, and has on either side of the neck a very large slit, within which are seen branchial arches, the

AXOLOTL.

gills being attached to the flaps which close the apertures. The axolotl is edible, and was formerly so plentiful that Cortes is said to have fed his army on it for some time.

Mexico almost rivals Amazonia itself in the variety and splendour of its avifauna, in which are represented both northern and southern forms, besides a few indigenous species. Such, especially, is the lovely little *quetzal* (*Trogon resplendens*), to which attaches some historic interest. In Aztec times royalty reserved to itself the exclusive use of its gorgeous plumage—scarlet,

indigo-blue, and a superb peacock-green, with two magnificent tail-feathers from two to over three feet in length. The quetzal, revered if not worshipped by the Aztecs, has been chosen as the national emblem of the republic of Guatemala, where it is also indigenous. Less brilliant, but in some respects more remarkable, is the *zenzontl*, or American mocking-bird, a member of the widely-distributed thrush family, noted both for the sweetness of its natural song, and still more for its astonishing mimetic powers. Humming-birds of several varieties are widely diffused, and range, as in other parts of the continent, from sea-level to great elevations. In the low-lying districts on the Atlantic side they build daintily-fashioned nests of the golden down of tree-ferns, and in these they lay not more than two tiny eggs, often not larger than marrow-fat peas. The common turkey (*Meleagris gallopavo*) is a native of the northern continent, and is still found in the wild state in the more inaccessible parts of the country. Besides the common variety, introduced into Europe in the sixteenth century, and called *coq d'Inde* in France in reference to the West Indies, and



QUETZAL.

"turkey" in England because supposed to come from the Levant, there are two other varieties in North and Central America. These are the *Meleagris ocellata* of Yucatan and Honduras, a very fine bird with bright plumage and eye-like markings on the tail-feathers and upper wing-coverts, and the *M. mexicana*, which ranges from Central America through Mexico to the Rocky Mountains, and is commonly called the Mexican turkey. The natives of Mexico appear to have domesticated no other animals except the *huahulotl*, a species of duck, and the *techichi*, an edible dumb dog, which, having been taxed by the Colonial Government, ceased to be reared for the table, and is now extinct.

Of the carnivorous birds—eagles, hawks, vultures, owls—the most noteworthy is the *zopilote* (*Cathartes* or *Rhinogriphus aura*), which is widely distributed in the New World, and in the United States is popularly known as the turkey-buzzard. In the southern States and in Mexico it serves the useful purpose of a scavenger in the coast towns, hence in some places is protected by the municipal authorities.

Fishes, some of excellent flavour, swarm in all the surrounding waters. In general the marine forms of the Atlantic and Pacific present the greatest difference, and are more closely allied to those of the southern continent than to those of the northern hemisphere. The red mullet of the Gulf of Mexico was so highly prized at the court of the Montezumas, that a regular carrier service had been organised to convey it fresh from the coast to the capital, a distance of 200 miles. Many of the fresh-water lakes and streams are also well stocked, the chief varieties being the trout, bass, eel, white-fish, and *bagre*, the last mentioned being largely consumed, and regarded as a great delicacy. Oysters,

clams, and other edible molluscs abound, and the pearl-oyster fisheries of the Gulf of California are of some economic importance.

Fauna of the Revillagigedo and other Insular Groups

Like the Galapagos archipelago off the coast of Ecuador, the little insular groups in the Mexican Pacific waters have their independent faunas. Thus a distinct species of humming-bird confines its range to the *Tres Marias*, three islets disposed longitudinally some 60 miles from the coast of Jalisco. The island of *Guadalupe*, over 150 miles from Lower California, has no less than eleven species of land birds, all differing from the corresponding varieties on the adjacent mainland.

Lastly, the volcanic *Revillagigedo Archipelago*, which stands in a line with the igneous rift of Central Mexico about 420 miles to the seaward of Colima, forms a separate zoological zone presenting some remarkable features. The group consists of the relatively large island of *Socorro* (*San Tomas*), 25 miles by 12 long, and 3660 feet high, and the three scattered rocks of *San Benedicto*, *Roca Partida*, and *Clarion*, with a total area of 320 square miles. All are uninhabited and take their name from Count de Revillagigedo, a viceroy of New Spain who ruled from 1746 to 1755.

Domestic Animals—Stock-breeding

Finding no domestic animals in the country beyond the one or two mentioned above, the first thought of the conquerors was to supply the want from Europe. The horned cattle, horses, sheep, goats, swine, and poultry, introduced with the first settlers, all multiplied rapidly,

and even in some instances reverted to the wild state, while the breeds generally deteriorated. Even now the cattle, despite crossings with the Indian zebu, the Philippine carabao, and the English Herefords, are small and bony, weighing scarcely more than 8 or 9 cwts. Nevertheless stock-breeding has become an important industry, especially on the dry steppes of the northern provinces and in the marshy savannas of Vera Cruz and Tabasco.

A few years ago the cattle ranches numbered over 21,000, and were valued at £103,000,000. These animals are exported exclusively to Texas, where they are improved by better pasturage, and fattened with oil-cake for the American and English markets. Many of the horses have preserved some of the mettle and beauty of their Arab and Barbary ancestors. But the small rough breed of *mustangs* or *ladinos* are so untamable that they have to be hunted down and broken in by the *vaqueros*, or "cow-boys," a race of full-blood or half-caste Indians as wild as themselves. Even more degenerate are the sheep, which yield not much more than 2 or $2\frac{1}{2}$ lbs. of a coarse, inferior wool exported in 1898 to the value of £700,000. The mutton is dry and flavourless, and even less esteemed than "kid," a euphemistic expression for goat's flesh. On the other hand, poultry thrive well and abound in all the farmsteads of the temperate and cold regions. Even in the capital "spring chickens" can be had for 1s. each, lake ducks for 5d. or 6d., and turkeys for 3s. to 4s. The indifference of the people to the sufferings of the lower animals is well illustrated by the sights constantly witnessed in the open markets of all the towns, where native women may be seen with great coops of chickens on their backs, and a number of live fowls dangling head downwards from their waist-belts.

CHAPTER VI

MEXICO (*continued*)—OUTLYING PROVINCES

Isthmus of Tehuantepec—Chiapas—Tabasco—Yucatan: Chenotes—Caves—Lower California: General Survey—Climate—Rainless Zone—Fauna—Fisheries—Mineral Wealth—Orography and Geology—Towns—Scenery of Lower California.

Isthmus of Tehuantepec

By the Tehuantepec depression, where they taper nearly to a point, the Mexican plateau and highland systems are almost completely severed from the southern parts of the republic, which, despite political frontiers, belong physically to the Central American isthmian region. This depression is itself an isthmus, and a relatively narrow one, being nowhere much more than about 120 miles from ocean to ocean. It is also very low, averaging little over 400 feet above sea-level, and rising to scarcely 3000 feet even in the ridge which, on the Pacific side, forms a sort of connecting link between North and Central America, and is crossed by the *Portillo de Tarifa* Pass at a height of about 1000 feet. From this Pacific ridge the land falls northwards to the Gulf of Mexico through a series of terraced cretaceous formations, which were deposited in the shallow sound flowing in secondary times between the Atlantic and Pacific Oceans. Later,

when the marine bed had been upraised, the chalk cliffs became overlaid in several places by Tertiary deposits. The land appears to be still rising, especially on the Pacific side, where recent alluvial formations are advancing seawards, and filling in the coast lagoons.

Chiapas—Tabasco

So sharp is the curvature of the contour line round the southern shores of the Gulf of Mexico, that the section of the republic situated beyond Tehuantepec is deflected from the normal south-east trend, first east and then nearly due north, in the direction of the Mississippi delta. The result is that the terminal peninsula of Yucatan lies due east of the capital, and from this circumstance the whole region is collectively spoken of as "East Mexico." It comprises the four States of Chiapas, Tabasco, Campeche, and Yucatan, of which the first two form part of the Central American orographic system, while the two others form a little marine limestone world of their own, soldered, as it were, on to the Central American mainland. Having a total area of not more than 90,000 square miles, with a population of less than 850,000, this East Mexican section bears no kind of proportion to Mexico proper, while its remoteness from the seat of government has often been a source of danger and difficulty to a power possessing no navy and indifferent land communications.

Chiapas, like North Mexico, has also its "Sierra Madre," perhaps better known as the *Sierra Atravesado*, a Pacific coast range, which forms a northern continuation of the Guatemalan system, and terminates somewhat abruptly above the Plains of Tehuantepec. It runs at an altitude of about 5000 feet some 25 or 30 miles from

the sea, between the maritime district of Soconusco and the interior, falling precipitously towards the Pacific, and sloping gently down to the Plains of Yucatan. Above the prevailing porphyritic formations rise here and there a few igneous cones, such as *Xoconochco* (7900 feet), of which Soconusco is a Spanish corruption, and *Tacana* (11,500 feet), culminating point of the range on the Guatemalan frontier. Although still emitting vapours, Soconusco has long been quiescent, while Tacana is frequently in a state of eruption and nearly always wrapped in smoke.

East of the Sierra Madre Central Chiapas develops a gently undulating plateau, well wooded and watered, and dominated here and there by a few crests, of which *Hueitepec* (7500 feet ?) is the highest.

Yucatan—Cenotes—Caves

Beyond a few scattered hills and spurs projected northwards by the Chiapas and Guatemalan Sierras, and a central ridge rising 400 or 500 feet above the plains in a north-westerly direction, there are no ranges in Yucatan, which forms a huge limestone mass of blunt peninsular shape built up by the polypi still at work in the neighbouring waters. Except on the east side, the peninsula is continued far seawards, and especially in the direction of Cuba, by extensive coralline beds, which are continually growing, and must in course of time reach the surface. A slight upheaval of about 20 fathoms would then more than double the size of the States of Campeche and Yucatan, the mean height of the whole region scarcely exceeding 100 feet. The *Great Bank of Yucatan*, which has an estimated area of some 60,000 square miles, is already visible at some

points, such as the *Alacran* reef, the *Mujeres*, *Arenas*, and other rocks and islets, some containing deposits of guano, but all dangerous to the navigation of these inland waters. The Bank extends over 120 miles in the direction of the north, and everywhere presents extremely steep seaward escarpments, where the soundings have revealed depths of 1000 or even 1500 fathoms in the *Yucatan Channel* flowing between the peninsula and Cuba.

Being mostly treeless, and apparently waterless, Yucatan itself presents a somewhat monotonous aspect, and at first sight would seem to be scarcely habitable. Yet at one time it was thickly peopled by the Maya nation, in some respects the most intelligent of all the American aborigines, and long before the discovery Mayapan was one of the chief centres of culture in the New World. But although there are no surface streams there is great store of underground water, percolating through the porous limestone rock and filling the large cavernous recesses, which were, and still are, reached by steps hewn in the solid rock, by withe-bound ladders and long inclined planes. The *cenotes*, as these natural reservoirs are called, were supplemented by the *haltunes*, natural troughs or potholes sunk in the impervious rock in some districts, and always replenished during the dry season. These troughs were very numerous, and sometimes of great size. Mr. E. H. Thompson found one near the Chuntichmool ruins with a capacity of several thousand gallons. "Steps had been cut by the prehistoric water-carriers down the solid rock-side into the cavity, and as the water gradually lowered, by these steps they could follow it to the last drop."[1] The natives also increased the supply by artificial processes,

[1] *The Chultunes of Labna*, Yucatan, Cambridge, Mass. 1897, p. 7.

and especially by constructing the so-called *chultunes*, or underground chambers, in those places where no natural receptacles existed. Few of these were of any great size, and the largest met by Mr. Thompson held less than 10,000 gallons. Yet when these were counted by the score, as in some districts, the yield was found ample for large communities. The Mayas also excavated basins, often of great capacity, such as those near the ruined cities of Uxmal and Xkichnook. "The *akalches* that make Uxmal to-day a hotbed of deadly fevers are the supply basins of the ancient times. Their once clear bottoms are now buried deep in swamp ooze, and decaying vegetation masks their true outline. Wild duck, serpents, and great frogs are now the only creatures that can live beneath the great white sheet of miasma that each night shrouds the deserted yet magnificent piles near by" (*ibid.*)

Of the caverns which abound in Yucatan, as in most limestone regions, and were formerly inhabited, or at least served as temporary refuges in troublous times, perhaps the most remarkable is that of Loltun, about 30 miles south of Merida. It was first explored in 1888-89 by Mr. Thompson, who tells us that in a region more accessible to tourists it would be world-famed. Its long passages, dark and silent as the grave, and penetrating nearly 100 feet below the surface, open suddenly into roofless grottoes, sunlit from above, enframed by huge tree roots and trailing plants, and heavy with the perfume of thousands of flowers, which, nourished by the rich, damp soil below, are quickened into fragrance and beauty by the hot sun's rays from above. Several of the grottoes, when the rays have the right inclination, are suffused with tints of pale

green or rose, rivalling in loveliness the famed Blue Grotto of Capri.[1]

Loltun, "cave of the flowery rocks," has a historic interest in connection with the "War of the Races" in 1847, when, according to native report, it served as an occasional refuge for the Mayas against the Mexican invaders of their territory. After the proclamation of independence in 1821, Yucatan, which had formed a special division of New Spain, became a province of Mexico, but in 1840 rose against the oppression of the Central Government. At first the white population was successful, and even obtained the full recognition of their autonomy. But rival factions at Merida and Campeche then began quarrelling amongst themselves, which gave the Mexicans the opportunity of returning and reducing both parties. Meanwhile the Mayas, tempted by these dissensions, had also revolted, and after many years of desultory warfare achieved a measure of success in the southern parts of the peninsula, where they have maintained their independence to the present day. It was during those disorderly times that Loltun and similar places were used as "rock shelters" by the natives.

Lower California—General Survey

Even more than the Yucatan peninsula, that of California, disposed in the opposite direction, from north to south, forms a separate physical region, which is connected with the rest of the republic only at its neck between the Rio Colorado and the Pacific Coast. When the conventional political frontier line was drawn across this narrow strip of arid and unproductive territory, the whole peninsula was generally believed to be of much

[1] Thompson, *Cave of Loltun*, Cambridge, Mass. 1897.

the same character, and it was accordingly left to Mexico by the Guadalupe-Hidalgo treaty of 1848. But since then further research has considerably modified this view, and Mr. Gustav Eisen's expedition of 1894-95 has shown that at least the southern section, from the La Paz oyster-fishing grounds to Cape St. Lucas, is a much more favoured land than had hitherto been supposed.

In this region the central *Sierra de la Giganta* was found to form a series of sierras, culminating in a peak about 8000 feet high, and consisting of a huge granite mass of upheaval, which shows signs of glacial action, chiefly in the form of enormous moraines, especially on the side facing the Gulf. Here the sierras are separated by the *San José del Cabo* valley from a non-fossiliferous limestone ridge, beyond which volcanic stratified red rocks prevail on the shores of the Gulf.

The whole peninsula as far north as *All Saints Bay* on the Pacific side (31° 45′ N.), and La Paz on the Gulf side (24° 10′ N.), is quite free from frost, as is also the Rio San José for some 15 miles from its mouth. Hence extensive tracts are suitable for pine-apple and coffee culture. Even the rainfall appears to be more copious than reported by former observers, ranging generally from about 12 to 20 inches, at least in the more favoured districts. In the south there are heavy summer downpours, from July to November, and still more bountiful discharges occasionally in January. The vegetation, which is densest between 1000 and 6000 feet, consists mainly of shrubs and low trees, besides an unexpected wealth of flowering plants, and at least two fruits of peculiar excellence — the red-fruited cactus (*Cereus thurberi*), and the *Cirucla* (*Cryptocarpa procera*).[1]

[1] *Jour. Geograph. Soc* October 1896, pp. 398-99.

Climate—Rainless Zone

On the east side the coast is fringed north of La Paz Bay with a chain of rocky islets, which form the *Loreto Archipelago,* and extend from the Bay of San Luis in the direction of Cortes Bay. This granitic and porphyry group lies in an almost rainless zone where the parched soil is unrefreshed by a single shower for years together. Yet the islands are the home of countless flocks of sea-birds, which have here deposited extensive beds of guano.

The same rainless zone extends over the greater part of the central and northern section of the peninsula, where the great drawback is undoubtedly an insufficient supply of moisture either from the skies or from springs and surface waters. By the thinly scattered natives a spring or brooklet is valued as the greatest of treasures, and the pattering of rain as the sweetest music. In the sultry summer months they gaze wistfully at the gathering clouds which form on the bosom of the ocean, but are wafted away beyond the peninsula without discharging a drop of moisture till they strike the western Sierra Madre, where they discharge their contents in copious showers. Hence in Lower California there are scarcely any perennial streams, no rivers that would be considered worthy of the name on the mainland. Although there are several over 20 feet broad, none of them are available for navigation, and few even for irrigation. The San José del Cabo is certainly utilised for this purpose, but in such a primitive way that most of the precious fluid runs waste. A not uncommon phenomenon is the total disappearance of a stream in its bed, which is due partly to excessive evaporation, and partly to the porous nature of the soil over which it flows.

Owing to this great dearth of humidity it has been calculated that not a tenth part of the whole peninsula, which has an area of a little over 58,000 square miles, will ever be brought under cultivation, or even made available for cattle or sheep farming. But in estimating its value as a national asset, account has also to be taken of its mineral and fishing resources, which are far from despicable.

Fauna—Fisheries—Mineral Wealth

Along the sea-board, between the Rio San José and San Antonio, the chief pursuits are tillage and stock-breeding. Wherever the springs and rivulets afford water for irrigation, the sugar-cane, rice, and brown beans (frijoles) are grown, while the white houses with their garden plots bespeak a prosperous population. Farther south the rocky coast is frequented by large numbers of waders, who here find abundance of food. This is the home of the boat-bill, the purple ibis, the tantalus, and other members of the family of the *Grallæ*. In the mountains the black eagle has his eyrie, and near the shore the fishing eagle hovers over waters teeming with marine life. At the southern extremity of the peninsula the sandy beach between Capes Palma and St. Lucas is frequented by the gigantic turtle, and the other smaller species which yield the tortoise-shell of commerce. This coast is also infested by large cuttle-fish, enormous sharks, and the sword-fish. On the utterly desolate Pacific Coast bask numerous schools of sea-lions and other varieties of seals. The sea-otter is here hunted for his valuable fur, and there is an extraordinary abundance of rare and excellent shell-fish, including the pearl-oyster and many other species, for the most part

still unclassified. The shelving sandy beach, strewn with sea-cresses, which cling to the clefts of the reefs everywhere cropping out, affords an ideal breeding- and feeding-ground for these marine crustaceans.

Some parts of the interior are now known to be richly mineralised. In the San Antonio district, 80 miles south of La Paz and 30 miles inland, several of the spurs branching off from the eastern sierras towards the Gulf contain extensive gold and silver lodes easily accessible from the coast. Copper has long been mined in some of the upland valleys, where gold, lead, and other minerals also occur.

Orography and Geology

In the central parts of the peninsula, lying between the northern and southern granitic sections, the land slopes gradually upwards from the Pacific Coast in a series of terraces to its highest altitude near the east coast, where are developed steep precipices from 2000 to 3000 feet high facing the Gulf. This singular conformation has suggested the idea that the peninsula forms only the half of a mountain range divided longitudinally, the corresponding eastern half having disappeared in the depression now flooded by the waters of the Gulf. The narrow strip of sea-board lying between the high escarpments and the shore is here broken into ridges and valleys, which correspond to the series of sierras farther south, and are in places clothed like them with a rich sub-tropical vegetation. In the direction of the north the whole system appears to attain its greatest elevation about the 31st parallel near the head of the Gulf in the lofty peak of *Mount Calamahue*, which rises to a height of 9130 feet, and is the culminating point

of the peninsula. Between the bays of *Mulegé* and *Los Angeles* on the Pacific side rises another cluster of hills known as *Las Tres Virgenes.* Here the formation is clearly volcanic, the summits presenting the appearance of breached craters, some of which still contain sulphates, while the slopes consist of scoriæ, lavas, and basalts. At the southern extremity rises the *Sierra de San Lazaro,* which culminates westwards in a peak 6300 feet high.

Towns—Lower Californian Scenery

La Paz, capital of Lower California, lies at the head of a fine deep bay, where hundreds of ships might ride securely at anchor. It is a port of call for steamers plying between San Francisco, Mazatlan, and Guaymas, and for sailing vessels freighted with merchandise for the various ports of the Pacific. La Paz has a population of about 3000, chiefly Spaniards of somewhat pure descent, and American traders. Its broad, straight streets are shaded by double rows of leafy ash-trees, and the low, whitewashed houses, relieved by green Venetian blinds, are built of solid stone, with tiled roofs.

Some 80 miles south of La Paz lies the little township of *San Antonio,* on the eastern slope of the Sierra, 32 miles inland from the Gulf. Since the discovery of the rich argentiferous veins in this district San Antonio has become a busy mining centre, and the population already exceeds that of the capital. Between this place and the extremity of the peninsula the line of coast is broken by the estuary of the Rio San José del Cabo, which gives its name to the flourishing agricultural settlements of *San José.* Orange culture is the chief pursuit in this delightful valley, which is clothed with rich sub-tropical growths right up to the foot of the

Sierra. Here the village of *San Juan del Cabo* completes the panorama of a region everywhere enlivened by the song of the mocking-bird and the chattering of Californian magpies noted for their bright, variegated plumage.

On the desolate Pacific sea-board there are no centres of population beyond a few farmsteads on the bays of *Magdalena, San Quintin,* and *All Saints.* The desert hilly districts are frequented by the wild sheep, the prong-horned antelope, the Californian deer, and other ruminants that browse on the bitter cytisus, and have their home amid the brambles and precipices of the hill-slopes.

Near the northern frontier lies the port of *San Diego,* around which cluster the mission of *St. Thomas* and the vineyards of *Comandu,* with an aggregate population of about 1200. Nearer to the Gulf, between Los Angeles and Mulegé Bays, on the slopes of *Mount Giganta,* is the mining town of *Loreto.* From the peak is named the central range, and from the town the neighbouring archipelago. Opposite Loreto is the large island of *Carmen,* whose flat, sandy shores are flooded at every tide, the evaporation of the water leaving a constant supply of dazzling white salt—a natural salina, from which the local government derives a considerable income. Altogether Lower California, despite the prevailing aridity, is a land of much promise, but also needing much capital and enterprise for its development.

CHAPTER VII

MEXICO (*continued*)—INHABITANTS

The Aborigines—Uncivilised Tribes—The Seri—The Otomi—The Tarahumaras—The Cultured Peoples—Mixtecs and Zapotecs—Mitla—The Tarascans—The Aztecs and Chichimecs—The Maya-Quichés—Early Records—Aztec and Maya Contrasts—Cholula—The Teocalli—Teotihuacan: Pyramids of the Sun and Moon—Papantla—The Teocalli of Vera Cruz—The Ruined Cities of Mayaland—Uxmal—Izumal—Aké—Chichen Itza—Palenque—Tulha—Lorillard—Maya Inscriptions—Calendar—Writing System—The Mexican Mestizos—The Spaniards—Anglo-Americans.

The Aborigines

It has been seen (Chapter II) that the substratum of the Mexican population is still largely formed by the full-blood aborigines, who are numerous especially in the northern provinces—Sonora, Sinaloa, Chihuahua, Coahuila, Durango—and in the extreme south—Chiapas, Yucatan. In all these lands, and even in some of the more central districts, notably Oajaca, they have hitherto kept more or less aloof from European influences, either because civilised and numerous enough to retain the sentiment and traditions of their former greatness (Mayas), or else at too low a stage of culture to rise to a higher level (Seri). Thus the process of fusion with the Hispano-Americans makes little progress, and until it is completed

there can be no question of a homogeneous Mexican nationality.

The above-mentioned Seri and Mayas stand at the opposite poles of native American culture, the intermediate stages being represented in ascending order mainly by the Otomi, Opata-Pima, Zoque-Mixe, Mixteco-Zapotec, Tarasco, and Aztec (see Table, p. 22).

Uncivilised Tribes—The Seri

Little was known of the primitive *Seri* people before their territory was visited in 1895 by Mr. W. J. M'Gee, at the head of a surveying party from the Washington Bureau of Ethnology. They occupy the large island of Tuberon in the Gulf of California, and a considerable tract on the neighbouring coast of Sonora, much of which had never before been traversed by white men, but has now received the name of Seriland. Mr. M'Gee found them to be "probably more savage than any other tribe remaining on the North American Continent. Most of their food is eaten raw; they have no domestic animals save dogs; they are totally without agriculture, and their industrial arts are few and rude." [1]

The Otomi

Scarcely more advanced are the numerous *Otomi* tribes, who were in prehistoric times driven by the Nahua intruders from the central plateau to the uplands, and still have their chief homes on the slopes of the hills encircling the Valley of Mexico. The Otomi fill a large place in the oral traditions of the Aztecs, by whom they have always been despised, and classed with the Chichi-

[1] *Sixteenth An. Report, Bureau Ethnology*, p. lxiii.

mecs as "dogs," that is, vile outcasts like the Indian pariah tribes. The term "Otomi," however, means nomads, although they really dwell in fixed settlements, from which they never wander, except to visit the market towns of the plains. From the curious practice of dyeing their flowing tresses red they have also been called "Red-haired," whereas the hair is black, coarse, and long, like that of the other aborigines. From these they differ chiefly in their deeper brown or chocolate complexion, and in their figures, which are rather undersized, heavy, and ungainly.

Those dwelling on the lower slopes are being slowly absorbed in the neighbouring Mestizo populations; but the great bulk of the nation, estimated at over 600,000, still retain the old language and tribal usages. They can, however, no longer be called savages, although they are, next to the Seri, perhaps the best representatives of the extremely rude social conditions prevailing in Central Mexico before the spread of a higher culture under "Toltec" or Maya influences.

The Tarahumaras

Of the numerous groups bracketed by Mexican writers under the *Opata-Pima* division the real affinities are far from being clearly established. One of the most interesting, if not the most typical, members of this widely ramifying family are the *Tarahumaras* (*Tarumaros*), who dwell on both slopes of that section of the Western Sierra Madre which traverses the States of Sinaloa, Sonora and Chihuahua. In the seclusion of their upland valleys they have hitherto displayed an extraordinary conservative spirit in resisting foreign influences. Although many of the tribes listened to the preaching of

the Jesuits so far back as the seventeenth century, and even call themselves "Christians," their Christianity is strangely associated with old pagan rites, and ceremonies are still observed at which the *padres* are not permitted to assist.

Originally the Tarahumaras were true troglodytes, and many of the caves which abound in their territory continue to be used as dwellings by several of the groups. Although some have in recent years acknowledged the authority of the local government, and have even settled amongst the general population, the great majority—some 40,000 or 50,000—cling to the old tribal institutions, and cannot be induced to exchange their cumbersome polysynthetic language for Spanish.

The reputation which the Tarahumaras have acquired for a sullen, apathetic disposition does them great wrong, and is entirely due to their attitude towards strangers, whose intrusion in their domain they resent. Amongst themselves they are a remarkably cheerful people, given to feasting and dancing "with their gods," and to national sports, such as tilting and foot-racing. Their very name is said to mean "Runners," and at certain times whole tribes take part in coursing matches which last for days together, the winners being awarded simple prizes like those of the Olympian games.

The Cultured Peoples—Mixtecs and Zapotecs—Mitla

Through the somewhat rude *Zoques* and *Mijes* of Oajaca and Chiapas a gradual transition is effected from the savage and barbaric to the cultured peoples, of whom the most important are the *Mixtecs* and *Zapotecs* of Oajaca, the *Tarascos* of Michoacan, the *Aztecs* of the Anahuac plateau, and the *Mayas* of Yucatan.

Mixteca, or Mixtecapan, that is, the land of the Mixtecs, appears to have been originally confined to the western parts of Oajaca. But at the time of the con-

TARASCO INDIANS OF PATZCUARO, MICHOACAN.

quest their political domain was far more extensive, and after its reduction was divided between the three present States of Oajaca, Puebla, and Guerrero.

Closely allied to the Mixtecs were the formerly

powerful *Zapotecs* of Eastern Oajaca, who ruled over all the *Tehuantepec* tribes, from whom the isthmus takes its name. They were subject to a hereditary monarch, who waged long wars against the Aztecs until his capital, Mitla, was taken and destroyed towards the close of the fifteenth century. The ruins of the palace of Mitla rank amongst the very finest in the New World, and sufficiently attest the high level of culture attained by the Zapotec nation before the arrival of the Spaniards.

Besides their almost classical beauty of outline and symmetrical proportions, the monuments of Mitla are remarkable for the extraordinary dimensions of the stones used in their erection. Professor Bickmore compares them to those of the temple of Baalbec in Syria, which is scarcely surprising when we read that in the "Hall of Monoliths" there are six huge columns disposed at even distances down the centre, each a solid block 11 feet high and as many in circumference. Enormous blocks of immense weight and bulk have also been placed as lintels over the doorways, and one marvels how they could be raised to elevations where it would require all the knowledge of modern engineering skill and mechanical appliances to place them. These structures are generally coated with stucco painted a Pompeiian brick red, and amid the ruins are found diminutive clay images like those we shall meet again at Teotihuacan in the Valley of Mexico. They seem to point at the route followed by the Toltecs in their migrations from Anahuac to Mayaland.

In the government of his people the Zapotec king was aided by the *Weyetao*, a high priest so greatly revered that his feet were never allowed to touch the ground. He presided over sanguinary rites only less horrible than those of the Aztecs, the numerous gods of

their pantheon having all to be appeased by human victims.

The Zapotecs are said, like the Lapps, to hoard their treasures in secret hiding-places for use in the after-life, and the report seems confirmed by the quantity of gold, jewellery, copper ornaments, and such like costly objects frequently brought to light in their territory. They are a strong, well-built, brave and vigorous race, and although still using the national speech, at least out of the school-room, where the rising generation is learning Spanish, they have begun to take their share in the general course of events. Juarez, who maintained the independence of Mexico against the French, and shot Maximilian, was a full-blood Zapotec.

The Tarascans

Formerly dominant in the kingdom of Michoacan, which included part of Guanajuato, the *Tarascans* still form the great majority of the inhabitants of that region. Although they had long maintained close social relations with the Aztecs, they were not members of the Nahua family, as shown by their speech, which is a stock language, and continues to be widely spoken throughout all the rural districts. No doubt they called the Aztecs "Fathers-in-law," and themselves *Tarhascue*, that is, "Sons-in-law." But this had reference, not to any direct kinship, but to indirect alliances, resulting from the long-established practice of seeking their wives outside of the tribe, and by preference amongst their Aztec neighbours. Like these they had a knowledge of pictorial writing, and were in other respects equally, if not more civilised. They surpassed all the surrounding nations in several of the industrial arts, though not in architecture; their social institutions appear to have been of a higher order,

and the national religion was certainly of a milder character, at least until the rage for human sacrifices spread amongst them a short time before their overthrow by the Conquistadors.

The Aztecs and Chichimecs

Reference has already been made to the probable relations in which the Nahuas and their Aztec descendants stood towards the prehistoric Toltecs, their Huaxtec (Maya) forerunners on the Anahuac tableland. The overthrow of the Toltec empire, and the destruction of their capital, Tula, is generally referred to the eleventh century of the new era, although earlier dates have been inferred from the confused and mainly fabulous traditions of the Nahua conquerors.

From these traditions, of which pictorial representations have been reproduced in Lord Kingsborough's great work on the *Antiquities of Mexico*, attempts have been made to reconstruct the history of the rude Nahua intruders from the dispersion of the Toltecs to the arrival of the Spaniards. During the whole of this period, estimated at some 500 years, the Nahuas, possibly a branch of the North American Shoshone (Snake) family, were occupied with the conquest of the aborigines on the central plateau between the Rio Grande del Norte and the Valley of Mexico, and with the expansion of their power by conquest and colonisation from the plateau southwards to Nicaragua.

Three epochs, or at least sequences, may be roughly distinguished: (1) spread of the first Nahua invaders from the fall of Topiltzin, last of the Toltec rulers, to the temporary eclipse of the Nahua power by an irruption of savage hordes collectively called *Chichimecs*, or "Dogs,"

200 years; (2) the so-called "Chichimec empire," that is, the arrest of Nahua culture and reversion to chaos and barbarism for another 200 years; (3) the expulsion of the Chichimecs and restoration of Nahua ascendency by the Aztecs with the allied Acolhuas and Tepanecs, under a legendary hero, Quetzalcoatl, afterwards deified as the incarnation of Tonacateatl, the serpent sun, creator of all things and supreme god of the Nahua mythology, a partly historic period of about 100 years, from the fourteenth century to the Spanish Conquest.

By many authorities the Chichimecs are themselves regarded as of Nahua stock, and it is possible, even probable, that some of the multitudinous peoples grouped under this designation belonged to that connection. But the great majority appear to have been brought together from the numerous wild tribes, such as the Otomi, the Cahitas, the Pames, and others who dwelt in the upland valleys of the surrounding Sierras, and had never been completely subjugated by the Nahuas. In the Aztec traditions they are described as utter savages, who despised all culture, tilled no land, lived entirely on the chase, and were omnivorous, eating jaguars, pumas, snakes, lizards, locusts, even such vermin as rats, moles, earth-worms, besides man himself. They wore no clothing except the undressed skins of wild beasts, had no settled habitations beyond caves and rock-shelters, or perhaps frail huts of foliage; no arms except bows and arrows, slings and clubs; no occupation save the hunt and war, that is, plundering and raiding hostile tribes. They drank the blood and ate the raw flesh of the slain on the battlefield, like the Prairie Indians carried off their scalps as trophies of victory, and reserved the captives for a lingering death by torture.

Such, at least, is the picture of the Chichimec hordes

presented by the early Spanish writers, and by one or two native historians, who derived their knowledge from the Aztec traditions and pictorial records. But it is difficult to understand how such utter savages, without cohesion or any kind of political organisation, could have acquired and maintained the supremacy over more cultured peoples on the Anahuac plateau, and established a great "empire" such as that described by the Aztec writer, Ixtlilxochitl.[1] But exaggeration may well be suspected when we read that Xolotl, founder of this empire, had under orders 3,202,000 men and women, and ruled over a vast domain under the title of "Great King of the Chichimecs."

This chronicler himself, like Garcilaso de la Vega, of royal lineage, tells us that, after a long series of revolts, wars, conspiracies, and revolutions, Maxtla, last of the Chichimec dynasty, was overthrown in 1431 by the Aztecs and their Acolhua and Tepanec allies. The confederacy was speedily dissolved by the Aztecs, who subjugated the allies, and then remained sole masters in the Valley of Mexico, where they are said to have founded their lacustrine capital, Tenochtitlan, now Mexico City, less than a century before its capture by Cortes. But they must have been dominant in Anahuac long before the fifteenth century.

Named from the shadowy land of *Aztlan* away to the north, where they were fabled to have long dwelt in the seven legendary caves of *Chicomoztoc*, the Aztecs had

[1] In all this formidable Aztec terminology it should be noted that the incessantly recurring *x* does not, or at least did not at first, represent the Spanish *x* or *j*=*ch* in *loch*, but was borrowed from the Portuguese alphabet to indicate the sound *sh*, as in *shock*, a sound unknown in Spanish but very common in Aztec. Hence *Mexico* should properly be pronounced *Meshico*, and not *Mejico* or *Mehico*, as it now is by Spanish-speaking peoples, who afterwards forgot this conventional use of *x*.

established themselves after long migrations in the Valley of Mexico, probably not long after the overthrow of the Toltecs. Time must in any case be allowed, not only for the spread of the Aztec name and fame throughout the whole region washed by both oceans, but also for the conquest of several powerful states, such as those of the *Tlascaltecs* in the present Vera Cruz, of the Tarascans, Zapotecs, Quichés, and others between Jalisco and Nicaragua, and even of the Mayas of Tabasco and Yucatan. Aztec colonies, such as those of the Pipils and Niquirans, had been founded in Guatemala and Nicaragua long enough to develop distinct varieties of the Nahua mother-tongue, and to give an Aztec complexion to the geographical terminology of those regions, as well as of Oajaca, while the very names of the Aztec rulers were held in such veneration that they became associated with the geographical features of the land — rivers, valleys, canyons—from the Montezuma[1] river in Anahuac northwards to the Montezuma canyon and valley of the Pueblo Indians and cliff-dwellers, and even the now vanished "Aztec Spring" of Colorado. Such proofs of direct contact and political or social influences diffused over an area nearly 2,000,000 square miles in extent, point, not at a few decades, but at many centuries of Aztec ascendency on the Anahuac plateau and neighbouring lands.

Yet the Aztec empire seems to have lacked cohesion, and was certainly a far less perfectly developed political organism than that of the Peruvian Incas. It was rather in the nature of a loose aggregate of half-subdued

[1] Properly *Moteuczoma*, to which the Spanish *Motezuma* comes nearer than the English *Montezuma*, with an unexplained intruding *n*. There is another variant, *Moctezuma*, which now figures on the maps in place of *Oposura*, the old capital of the Opata nation in the State of Sonora.

tribes and even nations, each left in the enjoyment of its own social institutions, language, and religion, but subjected to heavy tribute, including large numbers of slaves and captives required for the sacrifices on the altars of the Aztec gods. Hence a universal feeling of discontent, especially in the outlying provinces, which were held together by an organised system of terrorism, and were for the most part in a chronic state of revolt. Thus the republican Tlascaltecs of Vera Cruz at once joined Cortes on his march to the capital, after the capture of which the unwieldy empire fell to pieces, and nothing remained for the Spaniards except to replace it by a more effective administration.

Having their towns and agricultural settlements centred chiefly in the Valley of Mexico and surrounding plains, the Aztecs were naturally at an early date brought under European influences. Socially they were not greatly inferior to the conquerors, and although the Nahua language is still current in many rural districts, the two races have already been largely fused in a general Mestizo population, which constitutes the most numerous and advanced section of the present Mexican nationality.

The Maya-Quichés—Early Records

Somewhat different in this as in many other respects has been the political and social evolution of the widely-diffused *Huaxtecan* or *Maya-Quiché* peoples, who constitute incomparably the most important aboriginal element in Central America. But while the early history of the Huaxtecan or northern section is a complete blank, a glimmer of light is thrown on that of the Mayas, dominant in Yucatan, Tabasco, and Honduras, and of the

Quichés of Guatemala and Chiapas, both by the national traditions, and even by documentary evidence.

Although the key to the decipherment of the Maya inscriptions still eludes the grasp of American archæologists, attempts have been made with the aid of native scholars to extract a little sense out of the so-called "Katunes[1] of Maya History," and the Quiché "Popol-Vuh," two of the few native documents which escaped the iconoclastic zeal of the Spanish missionaries at the general holocaust of Maya-Quiché manuscripts in 1569.

From these sources it appears that many ages ago Votan, a messenger from the gods, came over the seas from some shadowy eastern land, and introduced the first elements of culture amongst the rude inhabitants of the Isthmian region. He was the reputed founder of the great Xibalba confederation, which figures largely in the Maya traditions, and perhaps for a time united all the Maya-Quiché peoples under one central power. Reminiscences long survived of a vast empire, which had its capital, *Nachan* or *Colhuacan*, the "Snake City," in the Usumacinta valley, Chiapas, where in 1746 were discovered some imposing ruins lining the banks of the river some ten miles south-west of the modern town of Palenque.

Then after a long series of revolts, dynastic rivalries and foreign wars, probably with the conquering Nahuas still advancing southwards, the empire was broken up, or dissolved into eighteen independent states, such as those of Coban, Lorillard (the "Phantom City"), and Quirigua in Guatemala; Copan in Honduras; Chichen-Itza, Aké, Uxmal, Kaba, and Mayapan (the "Banner City

[1] From *kat*, stone, and *tún*, to ask, a term applied in Yucatan to inscribed stones recording historical events, perhaps in the form of questions and answers.

of the Mayas") in Yucatan; Labora, Nohbecan, and Potonchan in Campeche.

Aztec and Maya Contrasts

The mere enumeration of these places points at a fundamental difference between the Nahua and the Maya-Quiché political systems. In Anahuac the federal principle was so weak that it soon disappeared, leaving the supreme power in the hands of the Aztec intruders from the north—a sort of military caste holding unstable rule over a multitude of peoples of different origin, speech, religion, and social institutions. But in the south the federal principle persisted, because here the great bulk of the inhabitants were of one stock and, allowing for dialetic differences, of one speech; nor were they intruders, but the true indigenous element, which had been in possession of the land from time out of mind, and had risen to a high level of culture at a remote epoch. Hence the overthrow of the Aztecs by Cortes was followed, not only by their political, but even by their social extinction; whereas the break up of the Xibalba confederation in pre-Columbian times left the Isthmian lands covered, like mediæval Italy, with a large number of petty independent states, still allied for national purposes, as we see in the protracted struggle against the Spanish invaders (1522-1550), but each a separate centre of a locally developed culture.

Thus is explained the striking contrast between the still extant memorials of the past in Anahuac and Maya-land. In the north ruined cities are not numerous, and all the most imposing monuments, such as the pyramids of Cholula and Teotihuacan, are referred by the Aztecs themselves to their Toltec precursors, that is, as seen,

to the Huaxtecan or northern section of the Maya-Quiché race. In the south, on the contrary, the whole land is thickly strewn with monumental remains—nearly seventy "ruined cities" have already been described in Yucatan and neighbouring States—each stamped with a certain individuality beneath a generally uniform character, and all far more imposing than anything that can be traced directly to the Nahuas on the Anahuan plateau.

Cholula—The Teocalli

Antiquaries generally regard the pyramid of *Cholula* as the oldest work of the kind in Mexico, or indeed in the New World. It rises not far from the city of Puebla to a vertical height of 177 feet, and covers a quadrangular space of no less than 44 acres, being 1423 feet on all sides at the base. It is solidly built of adobe, or sun-dried bricks, and in its present state has the aspect of a huge terraced mound clothed with vegetation and crowned with a twin-towered church of the usual Spanish American type.

This church, which is approached by a long winding track terminating in a flight of steps, replaces an old *teocalli*, that is, "God's House," or temple, such as surmounted all the truncated pyramids. The teocalli were the scenes of frightful butcheries, where, allowing for exaggeration, hundreds if not thousands of human beings were on solemn occasions immolated to the gods, and the palpitating bodies flung down the steps and often devoured by the assembled multitudes. Such ceremonial cannibalism was a survival of the indiscriminate cannibalism which, as would seem, prevailed amongst most primitive peoples in all parts of the world.[1]

[1] Dr. R. S. Steinmetz, *Endocannibalismus*, Vienna, 1896, p. 59 *sq.*

Teotihuacan—Pyramids of the Sun and Moon

No date is assigned to Cholula, whereas the twin pyramids of the "Sun and Moon" at *Teotihuacan*, about 30 miles north of Mexico City, on the Vera Cruz railway, are ascribed either to the Totonacs of doubtful Huaxtecan connection, or to the fourth of the nine somewhat legendary kings of the Toltecs, founder of the city of Teotihuacan towards the ninth century of the new era. The pyramid of the Sun has a base of 682 feet square and a height of 180 feet, that of the Moon being somewhat smaller, while both are connected by the "Path of the Dead," where the people witnessed the long procession either of the victims being led to the sacrificial altars, or else of the departed being borne to their graves in the numerous mounds or barrows still thickly strewn over the plain.

Teotihuacan, a chief centre of Toltec or pre-Aztec culture, was a vast city, 20 miles in circuit, and the whole of this space was originally and is still largely overlain with three successive layers of concrete floors, which are amongst the unsolved puzzles of American antiquity. Another puzzle is presented by the myriads of tiny clay heads from one to three inches long, which may be picked up in numbers by following in the wake of the plough, and, like those of Mitla, represent a great diversity of human types. There are certainly two or three American figures, and ethnographists also profess to recognise Mongol, Negro, and European features amongst the countless little objects which, to increase the difficulty, are found in association with chert and obsidian implements of the Stone Age.

Papantla—The Teocalli of Vera Cruz

Fifty miles north of Jalapa, in the State of Vera Cruz, that is, in the heart of the old Huaxtec domain, another pyramid of great archæological interest was accidentally discovered in 1780 near the village of *Papantla*. It is of small size, forming an exact square 82 feet at base and about 60 feet in vertical height, and, like all Mexican teocalli, is disposed in receding stages, a great stairway leading to the flat summit. But it differs from those of Anahuac both in its position in the forests at a small elevation above sea-level, and especially in the materials used in its construction. These are not sun-dried bricks, nor clay mixed with whinstones, but huge blocks of porphyry, highly polished, laid with mortar, and many of them carved with hieroglyphics, snakes, alligators, and other carvings. Nothing like this has elsewhere been brought to light, although several other teocalli are found scattered over the northern part of Vera Cruz, notably at *Misantla*, *Tasapan*, *Mapilca*, and *Casones*. This district, never having been colonised by the Nahuas, all such remains must be credited to the Huaxtecan section of the Maya-Quiché race.

The Ruined Cities of Mayaland

In the Aztec domain there is also a singular lack of those sumptuous and often elaborately sculptured edifices—temples, palaces, citadels, "nunneries"—which abound on the sites of the ancient cities scattered over the Maya-Quiché lands, and are numerous especially on the waterless plains of Yucatan.

Although spread over a great part of Central

America, the most important of these remains are comprised within the triangular space with apex at Merida, in north-west Yucatan, and base formed by a straight line running from Palenque in Chiapas to Copan in Honduras. Merida itself lies on the site of *Tihoo*, an old Maya city, the materials of which have been used up in the building of its successor. The sculptures and carvings of a bygone age are still to be seen embedded in the walls of the present houses, and most of the stone buildings in the province have in the same way drawn their materials from the nearest ruins of ancient Indian structures.

Uxmal—Izamal—Aké—Chichen-Itza

In Yucatan the best preserved and grandest of these ruins are these of *Uxmal*, 40 miles south of Merida. Other places, such as *Izamal* and *Chichen-Itza*, east or south-east of Merida, and the large island of *Cozumel* off the north-east coast, were no doubt important religious centres, but Uxmal appears to have been a great city, capital of the Cocomes kings after the destruction of the old metropolis, *Mayapan*. After the conquest of the country by the Spaniards, Uxmal, lying at some distance from the new European settlements, was neglected and forgotten. Hence its magnificent edifices escaped the builders' hands, and remained for generations in good preservation, and there is documentary evidence that till about 1650 the natives continued to worship in its slowly crumbling temples.

The principal structures cover about a square mile, and are mostly overgrown with rank tropical vegetation. The so-called *Casa del Gobernador*, grandest of all the buildings, forms a narrow parallelogram 322 feet long,

built entirely of dressed stone, and ornamented on all sides with a deep, richly sculptured frieze, the lower part of the façade being of smooth stone. In front are eleven doorways leading into a double series of chambers, but the wooden doors have disappeared and the lintels fallen in since 1688, when all was still perfect.

Without being symmetrical in design, the sculptured frieze produces an agreeable effect by the richness and elegance of the details, the most conspicuous of these being figures of warriors, kings, or priests seated in thrones over the doorways, and decked with a high head-dress of large plumes. Above these the carvings for about five feet all round the building display in varied detail a continuously repeated grotesque design somewhat like a hideous human face, with long carved nose projecting in high relief beyond the façade.

The other chief buildings differ from the "Governor's House" both in their façades and their general plan, forming quadrangles which enclose courtyards of imposing dimensions. The so-called *Casa de Palomas*, 240 feet in length, presents along the centre of the roof a range of nine pyramidal stone structures, pierced with small oblong openings, which produce the effect of a huge row of dovecots. Special interest attaches to a number of artificial mounds 50 to 80 feet high, surmounted by a long narrow building, which are reached by a broad flight of steep steps, and obviously correspond to the Mexican teocalli. Similar mounds, generally of the usual truncated pyramidal type, recur at most of the other ancient cities, the teocalli being replaced at Merida by a Franciscan convent.

The great pyramid at *Izamal* presents the further peculiarity of forming two superimposed pyramidal

piles of masonry, the common base measuring no less that 820 feet on each side, and the first platform 650 feet. Still more remarkable is the great pyramid of Aké, 25 miles east of Merida, which is approached by a gigantic flight of steps, and was topped originally by thirty-six pillars (twenty-nine still standing), each 4 feet square, and 14 to 16 feet high, the whole arranged in three parallel rows, 10 feet apart, supporting a platform 212 by 46 feet.

Round the central pyramid at *Chichen-Itza*, which supports a beautiful structure called the "Castle," are grouped several other piles, such as the "Nunnery," the "Tennis-Court," and various temples or palaces, all profusely adorned with rich friezes, statues, pillars, and reliefs. Some of these cities had already been deserted before the advent of the Spaniards, but Chichen-Itza was still inhabited by the Itzas, one of the most powerful of the confederate Maya nations. They afterwards migrated southwards to the Lake Peten district on the Guatemala frontier, where several groups bearing the name of Itza still survive.

Palenque—Tulha—Lorillard

Of the extensive group of monuments near Palenque the largest has been named the "Palace," and, if not a royal residence, was certainly a dwelling of some kind. It could not have been a temple, being disposed in a considerable number of apartments which communicate by halls or passages, the whole standing on a raised terrace, or low truncated pyramid facing the river. Close to the village of *Ococingo*, midway between Palenque and San Cristobal, capital of Chiapas, stands the ruined city of *Tulha*, which is supposed by some archæologists

to have been founded by the Toltecs after the destruction of their northern capital, *Tula*, by the Nahuas. Here was found the famous "Greek cross," on which some wild theories have been based.

The whole of this district, which is inhabited by the semi-independent Lacandons of Maya stock, abounds in sepulchral and other remains, and, according to native reports, even in "ruined cities" buried under a rank tropical vegetation. One such place has been lately discovered at *Menche* on the Upper Usumacinta, and named "Lorillard City," in honour of the American citizen who defrayed the expenses of M. Charnay's expedition of 1882. Here the very river banks above a long series of rapids are carved into flights of steps, which give access to the great temple and other structures, in their main features recalling those of Palenque. In the temple court was found perhaps the most remarkable specimen of the sculptor's art yet brought to light in the New World—a solemn Buddha-like figure sitting cross-legged, hands resting on the knees, and brow encircled by a jewelled diadem decked with large waving plumes.

Unfortunately all these monuments of an extinct culture are threatened with inevitable destruction by the exuberant tropical growths, which, while sheltering them for a time from atmospheric influences, end by weakening the foundations and rending the walls with their coiling roots and branches. Stephens, to whom we owe the first detailed account of Uxmal, tells us that on revisiting the place after the short interval of a single year, he already detected the progress of decay in a lofty structure, before bare and naked, now covered with tall grasses, weeds, and scrub, and on the top young trees twenty feet high. The foundations, terraces, and summits of other buildings were overgrown with rank herbage, and woody creepers

were rioting and trailing over façades and mounds. A strong and vigorous nature was struggling for mastery over the works of man, wrapping their monuments in its stifling embrace, and burying them out of sight. Since Stephens' time the ancient cities of Central America have been visited by many other explorers, notably by Mr. and Mrs. A. P. Maudslay, who have reproduced faithful pictures of many of the ruins in a sumptuous volume issued in the year 1899.[1]

Maya Inscriptions—Calendar—Writing System

Many of these monuments are elaborately carved with human and animal figures, and symbolic imagery, enframed in explanatory texts which themselves now need explanation. Most of the inscriptions are largely astronomical, a kind of public calendar, which, like the Roman *Fasti*, contained lists of all the days and months of the year, periods and recurrent cycles of time, with the dates perhaps of great historic events, and indications of the proper times and seasons for celebrating the public festivals in honour of the numerous Maya divinities.

Independently of these still undeciphered documents, it is clear from other sources, such as the Dresden Codex and King Axayacatl's great Calendar Stone, still preserved in Mexico, that both the Mayas and the Aztecs had made considerable progress in astronomy and the related sciences. Their calendar, declared by Humboldt to be more perfect than the Julian, included cycles of 52 years divided into periods of 13 years, the year itself being again divided into 18 months of 20 days each, with 5 supplemental days, making 365 altogether.

[1] *A Glimpse at Guatemala, and some Notes on the Ancient Monuments of Central America* (Murray, 1899).

The days and months are clearly indicated by corresponding signs in the codices and on the Calendar Stone, and the whole system is thus seen to be a local development, fundamentally different from the Babylonian and other Old World systems. It gives no support to the argu-

AXAYACATL'S CALENDAR STONE.

ments of those who, with Humboldt, have appealed to the Maya-Aztec calendric documents as convincing proofs of Asiatic influences in the evolution of Americal cultures. All such influences are arrested at the Stone Age, after which the civilisation of the New World proceeded on independent lines of development.[1]

[1] A. H. Keane, *Man, Past and Present*, chap. xi.

That the "Calculiform signs," as the characters of the Maya inscriptions are called from their resemblance to *calculi*, or "pebbles," represent a true writing system there is no longer any doubt, although all attempts at their interpretation have hitherto failed. They are not merely pictorial, like most of the Aztec writings, but, as shown by Dr. Cyrus Thomas, who has come nearest to a solution of the enigma, represent a true script, certainly not alphabetical, but partly ideographic, like the Chinese characters, and partly phonetic, if not even syllabic, the whole combined together as in the modern rebus. A symbol was selected because the name or word it represented had as its chief phonetic element a given consonant sound or syllable. Thus for the sound *b* a symbol would be used where *b* was the prominent element of the word to be indicated, without any necessary reference to its original meaning. The symbol for *cab*, "earth," might in this way be used in writing *caban*, a day name, or *cabil*, "honey," because *cab* is their chief phonetic element.[1]

Clearly the Maya script was in the transitional stage between the ideographic and the phonetic, and as this was the nearest approach made in the New World to a true alphabetic system, it should, even more than their architectural monuments, entitle the Maya-Quiché race to rank as the most intellectual and cultural of all the American aborigines.

The Mexican Mestizos

Amongst the numerous mixed Hispano-American populations of the republic those of Yucatan also unquestionably take the foremost position, at least for

[1] "Day Symbols of the Maya Year," in *16th An. Report, Washington Bureau of Ethnology*, p. 205 *sq.*

general intelligence and industrial habits. In these respects the contrast is striking between them and, for instance, the half-breeds known as *Vaqueros* ("Cow-boys") in the northern provinces. Owing to the diverse characters of the several constituent elements, similar contrasts, though in a far less pronounced degree, are naturally presented between all the Mestizo populations of the various provinces. Hence beneath a general uniformity, the peoples now being merged in a common Mexican nationality will continue to offer differences of temperament analogous to those found persisting amongst the European and all other nationalities.

The Mexicans, as they call themselves in a pre-eminent sense, are a stable, vigorous people, as shown both by their longevity and by their large families, ten or twelve children being far from rare. All travellers speak highly of their bright, cheerful disposition, exquisite courtesy and kindly feeling towards strangers. "A Mexican," writes Mr. Brocklehurst, "is almost as polite as a Japanese," and, "if they are a little distant at first, so much the better. When once you have been admitted to their acquaintance you will find them charming, and the oftener you visit them the more they will be pleased, increasing at each visit the cordiality of their reception" (p. 198).

The women are very musical, playing anything and everything—violin, piano, concertina, or guitar. The family will sometimes give itself up to the rehearsal of a whole opera, vocal and instrumental, a succession of visitors in no way interfering with the performance. But the bane of their existence is the *tortilla*, the preparation of which involves a prodigious amount of downright drudgery. The cake, which takes the place of bread, is made of Indian corn, and, being eaten hot, has to

be always ready at a moment's notice. The upper classes keep an expert hand hard at work all day long, and in the houses of the poor the wife is occupied in the same way, so that she has no time for any other household duty. The tortillas are very tough eating, "You tear them to pieces almost as you would a piece of leather. I

MAKING TORTILLAS.

pronounce them execrable, and until the Mexicans turn from tortillas to grinding their corn and making bread, the drudgery of manufacturing tortillas will prevent their women from rising in the social scale, and keep them in their present over-worked and degraded condition" (*ibid.* p. 200).

An even more degrading custom is bull-fighting,

which affects both sexes, and is almost as fashionable as in Spain. Sunday is the great day for these cruel spectacles, which seem to be a survival of the gladiatorial exhibitions of imperial Rome. Cock-fighting and lotteries are also favourite pastimes, all of which foster the passion for gambling which pervades all classes, and is indulged in by men, women, and even children.

Perhaps the greatest defect in the national character is a certain indolence, or at least lack of enterprise, which is frankly acknowledged by the people themselves. "It is difficult to introduce the American push and restlessness in business, and to overcome the habits formed in many centuries of letting the morrow take care of itself. There must be the mid-day siesta, and the number of working days is reduced by several feast days, saints' days and holidays, besides the Sundays. There is no doubt that the productiveness of nature is an inducement to very leisurely labour, though it is possible that industry will be stimulated by the inflow of settlers from the north, and that Mexico will take on new enterprise and productive vigour" (Romero).

The Spaniards

In all these respects there is little to choose between the Mexicans of mixed origin and those who claim unsullied descent from the early Spanish settlers. On the other hand, there is a very marked difference between these full-blood Creoles and the later Spanish immigrants, especially from Catalonia. These are beyond question a hard-working, temperate class, wonderfully frugal, thrifty, money-making, altogether the very best section of the community, though perhaps scarcely numerous enough to materially affect its future pros-

pects. Speaking of these recent arrivals, Romero tells us that, "In Mexico the energy of the Spaniard is remarkable. He is forcible of word and phrase, immensely vital, persistent, and enduring. After thirty years behind a counter he retires, a man of fortune, and is still a man of force, ready for undertakings demanding good brain power and courage. The thrifty Spaniard toils and slaves, and his ambition is to marry the daughter of a Mexican landowner, and so he lays the foundation for permanent wealth; for everywhere the man who gets the lands and holds on to them is the wealthy man. Speculators and financiers come and go like bubbles on a river, but the landed proprietor keeps a permanent clinch on humanity."

Anglo-Americans

This writer thinks there is not much danger of Mexico becoming "Americanised," because the self-indulgent Anglo-American will find it hard to compete with these self-denying Spaniards. The American is showy and spends lavishly, as also does the Englishman, else he would have maintained the commercial supremacy in Mexico which he lost to the more economic German, as the German in his turn lost it to the still more thrifty "Barcelonettes," as the plodding and patient Catalan immigrants from Barcelona are called. It is easier for the Americans, also, to fall into Mexican ways and adopt the Mexican moral standard, than it is to convert the Mexicans to the American view of life. "I do not doubt that Mexico has a great industrial, agricultural, and manufacturing future, but I fancy that its power of absorption, like that of Egypt, is greater than its facility of adaptation" (Romero).

CHAPTER VIII

MEXICO—*continued*

Topography—History of the Republic—Material Progress—Railway Enterprise—Trade—Foreign Exchanges—Finance—Government—Religion—Education.

Topography

LARGE municipalities are certainly numerous in Mexico, probably more so relatively as well as absolutely than in any other Spanish-American State. There must be over a hundred towns, or at least townships, with populations of 10,000 and upwards, while the subjoined table shows that those of 20,000 and upwards number about fifty-five. Yet the collective urban population is still small compared with the rural, at most one-sixth, and possibly not more than one-eighth—2,000,000 to 12,000,000, or 16,000,000 (highest estimate). This low ratio is due, partly to the large number of full-blood Indians, who are for the most part scattered in small tribal groups over the rural districts, and partly to the undeveloped state of the manufacturing industries, and the consequent absence of a numerous prolétariat class in the Mexican towns.

CHIEF TOWNS OF MEXICO

Towns.	Pop. 1895.	Towns.	Pop. 1895.
Mexico	345,000	Salamanca	24,000
Puebla	92,000	Salvatierra	24,000
Leon	91,000	Tepatitlan	24,000
Vera Cruz	89,000	Sta Maria del Rio	24,000
Guadalajara	84,000	Ciudad del Maiz	24,000
S. Luis Potosi	70,000	Santiago	23,000
Monterey	57,000	La Barca	23,000
Pachuca	52,000	Pinos	23,000
Hidalgo	45,000	San Juan	22,000
Lagos	43,000	Tuxtla Gutierrez	22,000
Durango	42,000	Matchuala	22,000
Zacatecas	40,000	Abesolo	22,000
Guanajuato	40,000	Saltillo	20,000
Allende	40,000	La Piedad	20,000
Merida	36,000	Tejupilco	20,000
Miahuatlan	35,000	Valladolid	20,000
Queretara	33,000	Culiacan	20,000
Oajaca	33,000	Colima	20,000
Silas	33,000	Huejutla	20,000
Morelia	32,000	Mazatlan	20,000
Aguascalientes	32,000	Jalapa	18,000
Fresnillo	29,000	Tixkotob	18,000
Irapuato	28,000	Orizaba	18,000
Celaya	28,000	Texcoco	16,000
S. Juan Bautista	27,000	Guadalupe	16,000
Toluca	27,000	Hermosillo	15,000
Tepic	26,000	Matamoros	15,000
Tehuantepec	26,000	Tula	15,000
Izamal	25,000	Campeche	15,000
Sayula	25,000	Acapulco	14,000
Ciudad Garcia	25,000	San Cristobal	13,000
Rio Verde	25,000	Chihuahua	12,000
Puruandiro	25,000	El Paso del Norte	12,000

The Central Mexican Railway, traversing the Anahuac tableland from the capital northwards, leaves the republic at the frontier town of *El Paso del Norte*, now renamed *Ciudad Juarez* in honour of the champion of the national cause in the war against Maximilian and his

French allies. El Paso, that is, "The Ford," stands on the right bank of the Rio Bravo, at a point where it is fordable, at an altitude of 3718 feet above the sea. It was originally a missionary station founded in 1585, then became a busy depôt for the transit trade, and is

CATHEDRAL OF CHIHUAHUA (BUILT OUT OF CHURCH TAX OF THREE CENTS PER POUND OF SILVER TAKEN FROM SANTA EULALIA MINE).

now a great centre of railway traffic, four main lines radiating from this point southwards to Mexico City, north-eastwards through Denver City to New York, eastwards to New Orleans, and north-westwards to San Francisco. The transit trade between the two republics is steadily increasing, and was valued in 1898 at nearly

£5,000,000, while this historic station has more than doubled its population during the decade ending in 1900.

In the vast but thinly peopled northern State of Chihuahua there is no other place of equal size except the capital, *Chihuahua*, a railway station on the Central line, 225 miles south of El Paso. Travellers are surprised to see quite a splendid cathedral with rich façade, two flanking towers and dome rising above this now obscure provincial town, dwarfing its puny habitations, and dominating the silent wilderness for miles and miles. But before the exhaustion of the rich lodes in the neighbouring *Cerro Grande*, Chihuahua was a great mining centre, with a population estimated at one time at nearly 80,000. The total output of the old mines, which have lately been reopened by some American capitalists, approached £30,000,000, and the very slag, built into the houses and used to enclose fields and gardens, is said to contain a percentage of silver estimated at the fabulous sum of £80,000,000. The new mint, established a few years ago, already ranks as the third in the republic.

In the arid and sparsely inhabited State of Sonora the chief places are *Hermosillo* about the headwaters of the Rio Sonora, and the port of *Guaymas*, which is one of the finest havens in Mexico. Guaymas, which has some rich but still untouched beds of anthracite, is connected by rail both with Hermosillo and through Arizona with the United States lines. Hermosillo grows some excellent wheat and sugar on lands irrigated by the Sonora affluents, and here are also some highly productive silver lodes.

Culiacan, capital of Sinaloa, is one of the oldest settlements in the New World. This Spanish city, in a

fertile district watered by the little coast stream of like name, dates from the year 1531, ten years after the Conquest. But long before that time the Nahuas had a station in the vicinity, which they called *Hue-Colhuacan*,

ANCIENT ROCK INSCRIPTIONS, CULIACAN RIVER, MEXICO.

"Snake Town," and is mentioned in their traditions as one of the places lying on the route followed by them during their migrations southwards to Anahuac. Culiacan is now connected by a railway 38 miles long with the port of *Altata*, where are shipped most of the gold

and silver ores extracted from the Sinaloan mines. Some 70 miles farther south lies the historical port of *Mazatlan*, the largest, but by no means the best on the Pacific Coast of Mexico. The harbour is merely an exposed roadstead, greatly inferior both to Guaymas and Acapulco, but more conveniently situated than either for the direct trade with California. Hence it has become a port of call for the ocean liners plying between San Francisco and Panama, and this traffic has given rise to several local industries connected with the shipping business. Like Culiacan, Mazatlan is an old prehistoric station, and its Indian name, meaning "Place of Deer," has reference to numerous fossil antlers found in the district associated with stone implements and other remains of primitive man.

The State of Coahuila, being largely occupied by the *Bolson de Mapimi* wilderness, contains no large towns except the capital, *Saltillo*, with an agricultural population of about 20,000. This place was founded in 1586 in a strong position on the slopes of the eastern Sierra Madre, as a bulwark against the incursions of the fierce predatory tribes, who then and long after roamed the northern plains on both sides of the Rio Bravo. These restless nomads—chiefly *Apaches* of the Athabascan (Tinné), and *Comanches* of the Shoshone (Snake) family—were not completely subdued till about the year 1880, and since that time Mexico, like the neighbouring parts of the United States, has been free from their depredations.

The whole region is now open for settlement, and although several attempts to develop the richly mineralised slopes of the western Sierra Madre have hitherto ended in failure, a flourishing agricultural colony has already been founded on the banks of the Rio Nazas, in the southern part of Coahuila, where it runs out in

the shallow Tlahualilo lagoon. In this lacustrine district the alluvial matter washed down from the Durango uplands by the Nazas and other streams during the freshets is extremely rich, and in 1890 some 250,000 acres of this land had already been reclaimed, and were producing most of the cotton grown in Mexico, besides heavy crops of maize and wheat. Since then the area under cultivation has been extended, and although the Negroes introduced in 1896 from Alabama to work the plantations soon withdrew, disheartened by disease and other troubles, this region, standing 4000 feet above sea-level, is found to be quite suited for Indian and even white labour. Thanks to these undertakings, and to the suppression of the marauding bands, the population of Coahuila is increasing, having been nearly doubled between the years 1879 and 1895.

In the conterminous State of Durango on the west extensive tracts in the more remote upland valleys are still held by numerous native tribes, mostly members of the Opata-Pima and Nahua families. The province comprised part of the region formerly known as "New Biscay," which was largely settled by hardy and enterprising Basques from Vizcaya. *Durango*, the oldest settlement, and still the capital, dates from 1551, and is finely situated on the Atlantic slope of the western Sierra Madre over 6000 feet above sea-level. It has always been a great mining centre, and in the vicinity is the famous Cerro de Mercado, one of the largest masses of native iron in the world. Here are also several meteoric stones weighing from three or four up to nearly twenty tons. The local mint issues both gold and silver coins to a yearly value of over £200,000.

South of Durango mining interests are still paramount in the richly mineralised States of *Zacatecas* and

Guanajuato, both in the western Sierra Madre, and both with capitals of like names. Zacatecas, founded in 1540

ZACATECAS.

by Nuño de Guzman on an old Indian settlement amid the romantic gorges about the head-waters of the Lerma, continues to mint silver dollar pieces to a yearly value

GUANAJUATO.

of over £1,000,000. The ores are drawn from the *Veta Grande*, "Great Load," the *San Bernab*, and many other mines, which after being worked for more than three centuries, show little signs of exhaustion.

The same monotonous picture of boundless mineral resources is presented by *Guanajuato*, where the main lode, worked down to 2000 feet, the deepest in Mexico, yielded £70,000,000 of pure silver, and then became flooded while still containing ores valued at over £300,000,000. It all reads like a fairy tale, but is supported by authentic documents.

Guadalajara, capital of Jalisco, lying farther south near the volcanic rift, possesses less stores of the precious metals, which here begin to thin out. But it has considerable agricultural resources, for which convenient markets are found both in the capital of the republic and on the Pacific sea-board. Hence it ranks for population amongst the chief cities of Mexico, and its prosperity is assured by its position at the converging point of several main routes ascending from the coast and radiating over the inland provinces. There are also several flourishing industries, such as glass and metal wares, paper, and especially weaving. The *rebozos* and other cotton fabrics turned out by the local mills are justly esteemed in all the surrounding provinces.

Valladolid, as the capital of Michoacan was originally called, is now better known as *Morelia*, having been so renamed in honour of Morelos, one of the most renowned leaders of the revolt against Spain. It stands over 6000 feet above the sea on the plateau, which drains to Lake Cuitzeo, and is dominated on the west by the conspicuous crest of Mount Quinceo, nearly 9000 feet high. Morelia, which is now connected by a picturesque line of railway with Mexico, is a well-built and well-kept

city, adorned with a fine cathedral and beautiful public grounds.

On the Pacific Coast, west and south of Morelia,

CATHEDRAL, GUADALAJARA.

stand the historical seaports of *San Blas* in the State of Jalisco, *Manzanillo* in Colima, and *Acapulco* in Guerrero. At present San Blas, near the mouth of the Lerma, with which it formerly communicated by a now closed lateral

branch, is the most frequented harbour on the western sea-board north of Acapulco. The port is sheltered from the west winds, but is of difficult access, and at low water has a depth of little over 12 feet.

Manzanillo, which communicates by rail with Colima, stands at the northern extremity of the *Cuyutlan* coast lagoon. This shallow basin is dry in summer, but might be permanently flooded by cutting a canal through the narrow neck of land separating it from Manzanillo harbour. Although of easy access and offering ample anchorage to large vessels, Manzanillo is avoided by skippers, who dread its deadly climate and the south-western gales, from which it affords little shelter.

Acapulco, like Manzanillo, suffers from a bad climate, and is consequently little frequented by sailing vessels. But its deep semicircular harbour, approached by the broad channel of the *Boca Grande*, affords perfect shelter to ships of the heaviest draught. Hence Acapulco, which has also the advantage of railway communication with the interior, must always remain the chief port of call for ocean-going steamers plying between San Francisco and South America. In colonial times Acapulco enjoyed a monopoly of the foreign trade on the North Pacific Coast, and here was equipped the great "silver fleet" which sailed every three years for the mother country. The route followed was generally across the Pacific to Manila, and thence round the Cape to Cadiz and Seville, where nearly the whole of the colonial trade was centred.

Beyond *Cilpantzingo*, which, although capital of Guerrero, is merely a small agricultural station on the route from Acapulco to Morelos, the chief centre of population in the south of Mexico proper is *Oajaca*, capital of the State of like name. *Antequera*, as it was originally

called, dates from the year 1522, and is consequently one of the very oldest Spanish foundations in the republic. It stands close to the still older Zapotec stronghold of Oajaca (*Huajiacac*), from which it takes its present name, and is famed for the varied beauties of its picturesque environment. It was from the lovely valley of Oajaca that Cortes took the title of "Marques del Valle," and some of his descendants are said to be still living in the district. This was also the birthplace of Juarez, whence the expression *Oajaca de Juarez* now often applied to the place by Mexican writers. Rich crops of sugar, maize, and other cereals are raised in the valley, and there are some thriving local industries, such as the spinning and weaving of the strong fibre yielded by the *pita*, a species of bromelia like the pine-apple.

North of Oajaca the main route, now supplemented by a trunk line of railway, traverses the State of *Puebla*, whose capital of like name is one of the great cities of the republic. Although lying close to the ancient Aztec city of *Cholula*, Puebla is essentially a Spanish foundation, dating from the year 1531, and noted for its fine churches and the magnificent scenery of the surrounding district. From some of the church towers quite a superb view is commanded of the city with its plazas, parks, and monuments, of the hill-encircled plains dominated to the east by Malinche, and westwards by Popocatepetl.

Puebla de los Angelos, as it was formerly called, is known as *Puebla de Zaragoza* since 1862, in honour of General Zaragoza, who in that year defeated the French in the vicinity. The interior of the city produces an extremely favourable impression on all visitors. Broad and regular streets lead across spacious squares from one magnificent church to another. In the centre of these thoroughfares is a channel, covered with large flagstones,

which carries off the torrents of rain that fall during the wet season. The architecture is much finer and more original than that of the federal capital. The partiality of the old Aztec people for bright and warm tints still asserts itself, often with much taste and delicacy.

On the undulating plain are grown great quantities of maguey, the large fields of which are enclosed by thick

EASTERN APSE OF CATHEDRAL OF PUEBLA.

cactus hedges. The Valley of Puebla, as it is called, although differing in its main features from the eastern region, is almost equally attractive, with its waving fields of maize in every stage of growth, from the green seedling to the matured stalk with its large light and dark yellow ears of corn. The valley is intersected in every direction by streams of water, giving life and plenty to the pretty little hamlets nestling in their fruit-gardens,

while extinct volcanoes still rise in the background. This smiling landscape is lit up by the brightest of suns, and over it circulate the purest breezes heavy with the fragrance of aromatic trees and shrubs, flourishing in the temperate clime and converting the vale of Puebla into a garden of Eden.

At Puebla the railways from the south and from the

MEXICO CITY.

east coast have already reached a height of 7200 feet, so that a slight ascent of less than 200 feet brings them to the capital of the republic (7340 feet). *Mexico* is universally recognised as the finest and most brilliant city in Spanish America. Yet it is not so much its public buildings and monuments, the regularity of its broad and interminable streets, or any of the perishable

works of man, but rather the solemn majesty of the incomparable natural scenery by which it is surrounded that produces such an overpowering and indelible impression on the observer. The effect is something entirely different from anything of our European experiences. It is no single or particular object, which may often be commonplace and repulsive enough, that here rivets the attention. It is rather the indescribable sublimity and strangeness of the whole picture that overwhelms the spectator, filling him with unspeakable rapture and surprise. From the borders of the renowned Valley of Mexico the most fascinating view is unfolded of the giant mountains Popocatepetl and Ixtaccihuetl throned in the background. Here are broad shimmering lakes, sombre cypress and pine groves, waving fields of golden corn, and, as the centre of the whole, the grand old city itself, its clear, bright atmosphere at last restored to its natural purity by the completion of the great drainage works.

Mexico lies in the centre of the Anahuac tableland, nearly midway between the two oceans, in a zone of perennial spring. It forms a perfect square, the generally well-paved streets, with their broad foot-paths, crossing each other at right angles, and disposed nearly in the direction of the four points of the compass. The streets themselves are mostly spacious, perfectly straight, and so level that in this pellucid atmosphere the eye takes them in at a glance from end to end. Those who have visited the Piedmontese city of Turin will be best able to form a correct idea of the general features and peculiar aspect of the city of Mexico. Amongst the leading thoroughfares are *Calle de los Plateros*, lined with brilliant jewellers' shops, the fine *Calle de Aguila*, and the interminable *Calle de Tacuba*, the old Tlacopan highway. A splendid sight is presented by the great central Plaza, on

which stands the wonderful cathedral, overladen with gold, silver, and precious stones, the most sumptuous Christian temple in the New World. It was here that the ill-starred Emperor Maximilian caused a magnificent fountain to be erected in the midst of splendid sub-tropical growths.

The surroundings of the city are delightful, notably

CATHEDRAL, CITY OF MEXICO (MOTHER CHURCH OF THE REPUBLIC).

the lakes with their winding canals and floating gardens, and the pleasant suburb of *Tacubaya*, with the handsome villas and country seats of the wealthy Mexicans. Over the castle of *Chapultepec*, situated on a porphyritic hill 213 feet high, and some four or five miles to the south-west of the capital, there still seems to linger the splendour imparted to it by the presence of the unhappy emperor. Maximilian greatly improved this "Windsor

of the New World," adorning it with frescoes and statues after the antique. The famous *Ahuehuetes* (*Taxodium distichum*) of the magnificent park at Chapultepec are said to surpass in beauty if not size the noble Wellingtonias or Sequoias of the primeval Californian woodlands. Some of the largest have a girth of from 35 to 40 feet, and one bears the name of "Montezuma," the grove having been planted by the old Aztec monarchs, on the site of whose palace stands the present Spanish edifice.

Another historical tree, that of Cortes' "Noche Triste," stands near an old church in the village of *Popotla*, on the road to Guadalupe. At the foot of this tree, a species of cedar still 40 feet high, Cortes is said to have passed a "sad night" bemoaning his misfortunes after the disastrous retreat of the Spaniards during the night of the evacuation. The famous sanctuary of Guadalupe, which is still resorted to by thousands of devotees, commemorates a popular legend about the apparition of the Madonna to an Indian, ordering him to have a shrine erected on the spot, and confirming the message by diverse miraculous incidents.

North of Mexico the first important station on the main line traversing the central plateau is *Queretaro*, capital of the State of like name. Standing 7000 feet above sea-level on the site of an old Indian settlement, Queretaro is a prosperous industrial centre, noted especially for a remarkable aqueduct of seventy-four arches spanning a neighbouring barranca at a height of 80 feet, and discharging into a reservoir with a capacity of over 35,000,000 cubic feet. A modest little monument on the neighbouring *Cerro de los Campanas* marks the spot where Maximilian and his generals, Miramon and Mejia, were executed by Juarez in 1867.

Beyond Queretaro the railway passes by the already described Guanajuato to *Aguascalientes*, which gives its name to one of the smallest States in the republic. The "aquascalientes" or "hot springs" of the place are sulphurous, with a temperature of from 77° to 95° F., and are considered efficacious in skin diseases. Some distance farther east stands the city of *San Luis Potosi*, capital of the State of San Luis, and formerly the chief mining centre in the eastern Sierra Madre. It occupies a fine position on a fertile plain over 6000 feet above the sea, and is well laid out in the usual chess-board fashion. As it enjoys an excellent climate, San Luis is utilised as a permanent military station, and is now also an important junction of the Mexican Central Railway. In recent years mining operations have been largely suspended for lack of capital. Near the city is the famous *San Pedro mine*, which is not now worked, the roof having fallen in when the pillars were cut away some years ago. From this mine was extracted the largest gold nugget ever found in Mexico. It was sent to the King of Spain, who in return presented the city with a remarkable clock, which now adorns the façade of the cathedral.

On the railway running from San Luis northwards to the United States frontier the most important station is *Monterey*, capital of the State of Nuevo Leon. This historical place, which is distant about 170 miles from *Nuevo Laredo* on the Rio Grande del Norte, was the centre of much fighting during the war of 1846-47. Here was fought in 1847 the battle of Monterey, in which the Mexicans attributed their partial success to an image of the Virgin on the *Puente Nuevo* ("New Bridge"), which was held by them for a long time against superior forces.

Monterey communicates by rail, through a well-known pass over the eastern Sierra Madre, with *Matamoros*, which lies on the south bank of the Rio Grande opposite Brownsville in Texas. Although officially called the port of entry, Matamoros is merely a riverside station, distant about 30 miles from the port of *Bagdad*, at the mouth of the river, in the State of Tamaulipas.

The steamers plying between New Orleans and Vera Cruz call regularly at Bagdad, and also at the more important seaport of *Tampico*, which stands six miles above the mouth of the Panuco River, within the southern border of Tamaulipas. Below the town the river is so shallow that vessels drawing over 9 feet have to ride at anchor outside the bar, where they are exposed to the full fury of the *nortes*. But higher up, the Panuco is navigable for over 30 miles by small steamers nearly as far as the old Indian station from which it takes its name, and which in the Huaxtecan language has the meaning of the "Ford." After a long period of depression caused by the opening of the land routes across the Rio Grande between the conterminous republics, Tampico has recovered much of its former commercial importance since the completion of the railway system between the coast and the central plateau.

By the branches converging at Tampico considerable quantities of produce are forwarded to the sea-board from *Aguayo* (now *Ciudad Victoria*), capital of Tamaulipas, and from *Pachuca*, *Tula*, *Tulancigo*, and the other industrial towns of the neighbouring State of Hidalgo. Pachuca, the capital, was a great mining city even in pre-Columbian times, and the rich gold and silver mines of the district, after being half-ruined by inundations, have again been opened by some English capitalists. Near Tulancigo stands the famous *Cerro de las Navajas*,

"Mountain of Knives," an extinct volcano, so called from the great quantities of cutting implements which in prehistoric times were here manufactured from the obsidian lying in thick beds round about the Cerro. The flints, cherts, and other materials used for making stone objects in Egypt, Europe, and North America were mostly replaced by obsidian in Mexico, where the quarries and workshops of the Mountain of Knives were for ages the chief source of supply for the populations of the Anahuac tableland.

Jalapa, late capital of the neighbouring State of Vera Cruz, lies on the flank of the extinct Macuiltepec volcano, 4335 feet above sea-level. It thus stands well above the malarious hot zone, and has the reputation of being one of the most salubrious places in the republic—a sort of health resort for the inhabitants of the coast-lands and of the fever-stricken seaport of *Vera Cruz*.

Despite its pestiferous climate and other drawbacks, such as the lack of proper accommodation, a dangerous coral-fringed coast, and a harbour poorly sheltered from the northern gales, Vera Cruz has held its position as the chief Mexican emporium on the Atlantic side ever since the occupation of the adjacent island of *San Juan de Ulua* by the Spanish navigator Grijalva in 1518. Beyond the shelter afforded by this and the opposite island, *De los Sacrificios*, there is no harbour at all, nor can any vessels enter the port during the prevalence of the *nortes*, which blow at intervals from October to March. Even vessels at anchor under the lee of the wind have often to put to sea to escape shipwreck on the neighbouring rocks. Vera Cruz should certainly have been founded at *Anton Lizardo*, about 15 miles farther south, which has the only good harbour in the Gulf, and is now also the terminus of a branch line of

the Mexican Southern Railway. But Vera Cruz continues to hold its own, and two-thirds of the Mexican exchanges still pass through its port. "Little," writes Prescott, "did the conqueror imagine that the desolate

THE PLAZA OF VERA CRUZ, MEXICO.

beach on which he first planted his foot was one day to be covered by a flourishing city, the great mart of European and Oriental trade, the commercial capital of New Spain."[1]

[1] *Conquest of Mexico*, i. p. 228.

There are no monuments or imposing buildings in the place, and travellers passing through seem attracted chiefly by the flocks of *zopilotes* (turkey buzzards) which here do all the scavengering. These repulsive but useful creatures are under the protection of the municipality, which imposes a fine of twenty shillings for killing one of them.

Orizaba, present capital of the State of Vera Cruz, is a large station on the main line to Mexico City, about 80 miles from the coast, and 4000 feet above the sea. It gives an alternative name to the superb Citlaltepetl volcano, by which it is overshadowed, and a magnificent view of which is obtained from the eastern suburb of the city. Notwithstanding its great altitude, Orizaba still lies almost within the hot zone, and is a chief centre of the sugar industry. A great part of the fertile valley of Orizaba is under sugar plantations, and there are large mills in the district where the cane is crushed. But the competition with the subsidised beet sugar industry in Europe grows yearly more severe.

Merida, capital of Yucatan, although a small place compared with several of the great cities of Mexico proper, is the largest centre of population in that southern section of the republic which lies beyond the Isthmus of Tehuantepec. Merida is not only surrounded by a large number of ruined Maya cities, but itself occupies the site of the ancient *Tihoo*, the materials of which have been used up in the building of the Spanish city. The sculptures and carvings of a bygone age are still to be seen embedded in the walls of the present houses. Indeed the same remark applies to most other modern stone buildings in Yucatan, which have been largely constructed out of the materials supplied by the surrounding Indian ruins.

Merida is connected by a railway, 23 miles long, with the new seaport of *Progreso*, which was founded in 1871 on the north coast, a little distance above its old port of *Sisal*. Although the change was made because the roadstead at Sisal was exposed to the full fury of the *nortes*, that of Progreso is almost as dangerous and inaccessible to shipping. Here the vessels engaged chiefly in the henequen (Sisal hemp) trade have to ride at anchor four or five miles from the coast, and often avoid shipwreck only by escaping to the high sea.

Some distance south of Sisal lies the historical city of *Campeche* (*Campeachy*), present capital of the State of like name, and in colonial times one of the chief centres of trade on the Atlantic side of the Spanish main north of the Gulf of Darien. In those days of imperial monopolies all commercial relations were restricted to the three seaports of Vera Cruz in the north, San Juan de Nicaragua in the south, and Campeche between the two. The last mentioned has served as the only outlet for the produce of Yucatan, Tabasco, Chiapas, and most of Guatemala, but was especially associated with the export trade in the valuable red dyewood known as logwood, and also commonly called Campeachy wood, because it was chiefly shipped at this place. Since the abolition of monopolies, Campeche, possessing only an exposed roadstead, has lost most of its commercial importance, and its trade is now mainly confined to lumber, hides, coco-nuts, salt, and a little sugar. The dyewoods, drugs, and other more valuable commodities are at present forwarded chiefly through *Carmen*, the rising seaport near the Usumacinta delta in the neighbouring State of Tabasco. *San Juan Bautista*, capital of this State, and formerly known as *Villa Hermosa*, stands in

the midst of the woodlands about the head of the delta, and has for its outlet the port of *Guadalupe* (*Frontera*), on the right bank of the Grijalva.

San Cristobal, capital of the neighbouring State of Chiapas, stands on the plateau amid the ruined cities of the Chiapanec (Maya-Quiché) nation. Like Merida, it occupies the site of one of these places—*Hue-Zacatlan*—at an altitude of about 6500 feet, and is consequently the most elevated city in the southern part of the republic. Its outlets towards the Pacific are *Tonala* and the thriving little seaport of *San Benito* or *Soconusco*, which forwards the cacao and other produce of the fertile district of Soconusco.

History of the Republic

A rapid survey of the endless revolutions and political disorders of all sorts which followed the War of Independence, and were prolonged over the greater part of the nineteenth century, produces a sense of weariness accompanied by a feeling of surprise that the Mexican people could have ever recovered from such a succession of apparently overwhelming calamities. But it is to be remembered that such troubles are often for the most part mere ripples on the surface of the national life. When the records are concentrated within the compass of a few pages or chapters, where all due perspective is lost, they acquire an almost unnatural intensity, with the result that the reader becomes impressed by an exaggerated picture of woes and horrors crowded too closely together. Other countries—France during the Fronde and the Revolution, England during the Wars of the Roses—have passed through similar and greater disorders, and have survived, as do all peoples endowed

by nature with a strong and enduring vitality. That the Mexican people possess such a vigorous life has already been shown. Hence it need no longer cause any surprise that they also, after a long series of political convulsions, show no symptoms of exhaustion, but on the contrary seem now to have entered with renewed vital energies on a period of national stability, peace, and prosperity.

A brief tabulated summary must here suffice of the leading events which followed the proclamation of independence by the "Liberator," Iturbide, in February 1821:—

1821. Surrender of Mexico City by O'Donoju (O'Donohoe), last of the viceroys.
1822. Iturbide proclaimed emperor. Republican standard raised by Santa Anna at Vera Cruz.
1823-4. Iturbide abdicates; exiled; withdraws to London; returns; is captured and shot.
1824. First Liberal constitution under President Felix Victoria ("Guadalupe Victoria").
1828-30. Contested presidencies of Pedraza, Guerrero, and Bustamente.
1835. Reaction of the Church party; constitution of 1824 abolished; the nineteen Confederate States and five territories merged in a consolidated republic under Santa Anna as president, but practically dictator.
1836. Texas refuses to submit; defeats and captures Santa Anna.
1837. Santa Anna returns and resumes office.
1839-44. Bravo's short presidency followed by much anarchy; Santa Anna's first dictatorship, with two others.
1844. Constitution restored with Santa Anna president; banished and succeeded by Canalizo.
1845. Herrera president; war with United States to recover Texas.
1846. Santa Anna again president.
1848. Treaty of Guadalupe; cession of much territory to United States (see above).
1853. Santa Anna's second dictatorship; Gadsden Treaty (see above); great financial distress; "Plan of Ayutla"; flight of Santa Anna; general anarchy.
1855. Provisional government under President Comonfort.
1856. Rupture with Spain.

1857. Liberal constitution of 11th March, suspended 1st December. Comonfort dictator; Conservative reaction opposed at Vera Cruz by Vice-President Benito Juarez at the head of the "Puros," or advanced Liberals; "War of Reform" (1857-60).

1858–59. Comonfort deposed in the capital by Zuloaga, who abdicates in favour of Miramon, general of the Conservative forces; but Miramon declining the presidency, Zuloaga resumes office; British legation violated; in Vera Cruz the United States envoy Maclean recognises Juarez, who introduces sweeping Liberal measures.

1860. Capitulation of Guadalajara; flight of Miramon from the capital; triumph of the Liberals.

1861. Juarez introduces further Liberal reforms; marriage declared a civil contract; celibacy and ecclesiastical tribunals suppressed; confiscation of Church property, valued at £75,000,000, and over one-third of the land; final separation of Church and State; Spain, France, and England urge claims for losses of their subjects resident in Mexico; Convention of London; intervention of the allies, who occupy Vera Cruz in December.

1862. England and Spain withdraw, their claims having been settled by negotiations; war continued by France.

1863–4. The capital occupied by the French; the Imperial crown accepted by the Austrian Archduke Ferdinand Maximilian, who arrives June 1864.

1867. After diverse vicissitudes the French withdraw; Maximilian captured and shot at Queretaro, 19th June.

1867–69. Various pronunciamientos by Santa Anna and others.

1871–72. Juarez president; dies in office, July 1872, and is succeeded by Lerdo de Tejada.

1873–74. The Liberal constitution of 1857, which had been suspended in 1858-60, and again in 1863-67, is now largely amended, and henceforth continues to be the organic law of the republic.

1876. Insurrection by Porfirio Diaz; enters Mexico and assumes office as provisional president; Tejada retires; Iglesias takes arms as president.

1877. Diaz defeats Iglesias and is elected president.

1879. Insurrection of Negrete.

1880. Manuel Gonzales president.

1884. Diplomatic relations resumed with Great Britain; riots with bloodshed in the capital, caused by financial troubles and the conversion of the English debt; Diaz president.

1886. Insurrections at Nuevo Leon and elsewhere suppressed.

1892. Insurrection of Garza suppressed; Diaz re-elected president; Indian frontier troubles.

1896. President Diaz re-elected.
1897. Attempted assassination of the president by Joaquin Arroyo, who is cut down by the police.

Few of the later insurrections can be regarded as serious, and Mexico may be said to have entered on a period of relative peace, with every promise of stability

GOLD MINING CAMP OF ZAVALITA, STATE OF OAXACA.

and material progress, since the re-election of Porfirio Diaz to the presidency in 1892.

Material Progress—Railway Enterprise

Progress is indicated especially by the great development of railway enterprise, which has proceeded at an accelerated rate during the last two decades, being for the most part promoted by foreign investments, which are themselves strong proof of confidence in the per-

manence of a stable government. In the year 1900 nearly 8000 miles of railway had been completed, and of this only about 900 miles had been built by Mexican, all the rest by foreign—chiefly English and American—capital. Subjoined is a tabulated statement of the more important lines now in operation:—

Railways.	Length in Miles.	Districts traversed.
Mexican	293	Mexico to Vera Cruz, and Apizaco to Puebla.
Hidalgo	92	Tepa to Sototlan, Pachuca, and San Augustin.
Interoceanic (Acapulco to Vera Cruz, projected)	490	Mexico to Vera Cruz; Mexico to Puente Ixtla by Morelos, with branches to Libres and S. Nicolas.
Mexican Central	1877	Mexico to Paso del Norte; Silas to Guanajato; Irapuato to Guadalajara; Aguascalientes to Tampico; San Blas to Huaristemba; and Guadalajara to Ameca.
Mexican National	1056	Mexico to Laredo; Acambaro to Patzcuaro; Matamoros to S. Miguel.
Sonora	262	Guaymas to Nogales.
Yucatan	166	Merida to Valladolid, and Progreso to Conkal; Merida to Campeche and Calkini.
Mexican International	658	Piedras Negras to Durango; Sabinas to Hondo; Matamoros to Zaragoza; Harmos to S. Pedro.
Southern Mexican	228	Puebla to Oajaca.
Monterey-Gulf	388	Monterey to Traviño. Monterey to Tampico.
Tehuantepec	192	Coatzacoalcas to Salina Cruz.

Trade—Foreign Exchanges

Detailed statements have already been given of the chief mineral, agricultural, and industrial resources of the

republic. How immensely the precious metals preponderate over all other sources of national wealth may be seen in the subjoined table of the exports for the year 1898:—

	Value.		Value.
Silver	£7,140,000	Hides and skins	£718,000
Silver coin	3,640,000	Cattle	900,000
Silver ore	2,430,000	Tobacco	890,000
Gold	1,250,000	Ixtle	120,000
Coffee	2,130,000	Zacaton root	240,000
Henequen	2,310,000	Vanilla	106,000
Wood	720,000	Chick-peas	105,000

Both imports and exports continue to increase steadily from year to year, as shown in the following returns for years 1894–98:—

Year.	Imports.	Exports.	Total.
1894.	£6,000,000	£16,000,000	£22,000,000
1895.	6,800,000	18,000,000	24,800,000
1896.	8,400,000	21,000,000	29,400,000
1897.	8,420,000	24,000,000	32,420,000
1898.	8,700,000	26,000,000	34,700,000

The exchanges with the countries which have the largest dealings with the republic were returned for the year 1898 as under:—

	Imports from	Exports to
United States	£4,300,000	£19,000,000
Great Britain	1,600,000	3,000,000
France	1,080,000	1,060,000
Germany	960,000	1,400,000
Spain	400,000	250,000
Sundries	350,000	1,130,000

In the same year the vessels engaged in the foreign and coasting trade were returned at 10,527 of 4,085,000 tons entered, and 10,452 of 3,880,000 tons cleared.

Finance

Of the yearly income about 45 per cent is derived from internal taxation, 40 from customs, and 15 from miscellaneous sources. About 46 per cent is absorbed in the service of the national debt, 44 in the administration, and nearly 10 in railway subventions. For 1899 the total revenue was £11,000,000, the expenditure £10,950,000, and the debt (external and internal) £110,000,000.

A considerable portion of the yearly revenue goes to the maintenance of the army, which includes 23,600 infantry, 7250 cavalry, and 2300 artillery; total 32,150. But with the reserves the total fighting strength is estimated at 124,000 infantry, 20,000 cavalry, and 8000 artillery. All adults are liable for military service from their twentieth to their fiftieth year.

Government—Religion—Education

By the Constitution of 5th February 1859, with modifications down to May 1896, Mexico is declared a federative republic of 27 states, 2 territories, and the federal district, each enjoying self-government for local affairs, but all bound together in one political system. The legislative functions are invested in a Congress of two Chambers—House of Representatives and Senate, the former being elected by universal suffrage for two years, in the proportion of 1 member for 40,000 inhabitants. The Senate consists of 56 members, 2 for each State, elected like the deputies, and, like them, enjoying a subsidy of £600 a year. The executive is entrusted to a President, elected for four years by a body of electors popularly chosen in a general election. He is assisted

by a Council, and seven Secretaries of State for Foreign Affairs, Interior, Justice and Public Instruction, Colonisation and Industry, Communications and Public Works, Finance, War, and Marine.

Although the great bulk of the civilised inhabitants are Roman Catholics, the Church is absolutely independent of the State, and all religions enjoy equal rights before the law. No ecclesiastical body can acquire landed property, and public processions, though tolerated, are not encouraged. There are a few Protestant congregations with about 120 churches in the capital and some other large towns. But the propaganda organised by some Protestant bodies has produced no appreciable results.

In nearly all the States education is free and compulsory, although owing to local circumstances the law is not everywhere enforced. Even in the municipality of Mexico as many as 176,000 were returned as illiterate in 1890, while 15,000 others could read only. In 1896 the number of schools supported by the States was nearly 6000, and by the municipalities 3220, the average attendance being 490,000, and the number of teachers 13,350. There were, moreover, 2442 private and ecclesiastical schools, with over 101,000 pupils, several colleges and technical establishments for law, medicine, engineering, and other professions, including a military and a naval college, with an attendance of about 21,000. Thus the total average attendance scarcely exceeds 510,000, or about 1 per 30 in the whole population.

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CHAPTER IX

GUATEMALA

Extent, Area, Population—Physical Features—The Sierra Madre—The Altos—Igneous System—Fuego and Agua Volcanoes—Hydrography—Rivers—Lakes—Climate—Flora—Agricultural Resources—Fauna—Inhabitants—Maya-Quichés—Pipils—Topography—Government—Finance—Trade.

Extent—Area—Population

From the table at the end of Chapter II. it will be seen that Central America, properly so called, that is, the Isthmian region between Mexico and South America, comprises five independent States—Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica—besides the colony of British Honduras, and the Isthmus of Panama which belongs politically to Colombia. These various political divisions have a collective area of 224,960 square miles, and a population of 3,768,000.

Of the five independent States, all republics, Guatemala is much the largest and most populous, its area (63,400 square miles) being a little over one-half, and its population (1,535,000) more than two-thirds of those of the four other republics taken together. It extends from the Atlantic south-westwards to the Pacific, a distance of 280 miles, and from Mexico and Belize, where the

boundaries have already been given, a distance of 320 miles south-eastwards to Salvador and Honduras. Here the frontiers follow a somewhat irregular line drawn from the mouth of the Rio Tinto in Honduras Bay along the crest of the hills to the Rio Paza, and then along the course of that river to its mouth on the Pacific. The republic, which has a somewhat triangular form, with base on the Pacific, is divided for administrative purposes into 22 departments, with areas, populations, and chief towns as under:—

Departments.	Area in sq. miles.	Pop. 1897.	Chief Towns.	Pop.
Guatemala	1,000	147,585	Guatemala	70,000
Sacatepequez	300	50,852	La Antigua	18,000
Amatitlan	300	40,626	Amatitlan	9,000
Escuintla	2,000	37,973	Escuintla	6,000
Chimaltenango	1,000	69,335	Chimaltenango	4,000
Solola	800	90,804	Solola	14,000
Totonicapan	1,000	160,419	Totonicapan	22,000
Quiché	1,500	90,929	Santa Cruz	7,000
Quetzaltenango	600	114,800	Quetzaltenango	26,000
Suchitepequez	3,000	46,182	Mezatenango	5,000
Huchuetenango	4,750	150,173	Huchuetenango	6,000
San Marcos	1,000	91,323	San Marcos	4,000
Peten	15,000	10,480	La Libertad	1,000
Verapaz	14,000	164,725	Salama	8,000
Chiquimula	2,500	66,733	Chiquimula	5,000
Zacapa	5,000	45,045	Zacapa	4,000
Jalapa	500	35,020	Jalapa	5,000
Jutiapa	2,000	50,461	Jutiapa	2,000
Santa Rosa	1,300	37,499	Santa Rosa	2,000
Retalhuleu	800	25,431	Retalhuleu	4,000
Izabal	2,650	8,105	Izabal	1,000
Livingston	1,600		Livingston	1,500
Total	63,400	1,534,500		

Physical Features—The Sierra Madre—The Altos

In its main outlines Guatemala may be described as an elevated plateau, which presents its highest and steepest

escarpments towards the Pacific, and slopes in long irregular inclines in the direction of the Atlantic. On the west side the precipitous edge of the tableland runs at a distance of about 60 miles from the coast, which here trends from the Mexican frontier first south-east and then due east to Salvador. Between these two conterminous States the escarpments of the plateau coincide partly with the crest of the *Sierra Madre*, which traverses the territory nearly from west to east, and partly with the axis of the volcanic system, which diverges more to the west by south, and thus follows the coast-line for the greater part of its course.

From the Mexican frontier, where both systems converge, there is a continuous decrease in elevation in the direction of Salvador, and with this decrease corresponds a fall in the "Altos" ("Heights"), as the elevated plateaux are called in the north-western parts of the republic. Here, in fact, that is, in the departments of San Marcos, Totonicapan, and Huchuetenango, bordering on Chiapas, are situated the true highlands, where the tablelands stand at altitudes of from 6000 to 8000 feet, but in the great central plain of Guatemala fall to about 5000 feet, and towards the Salvador frontier scarcely anywhere exceed 3400 feet.

Igneous System

Beyond the still active Tacana volcano on the Mexican frontier follows along the igneous chain the symmetrical Tajomulco cone, which attains a height of nearly 11,700 feet, and is still active. At least incandescent vapours were seen shooting up from the crater in 1863, while large quantities of sulphur are continually deposited by the solfataras on its flanks. The system is continued in

Quetzaltenango by a triple group, including the superb *Santa Maria* (11,480 feet), which is certainly extinct, and the neighbouring *Cerro Quemado* (10,200), which was the scene of a violent eruption in 1783, but has since been dormant. Farther east beyond the Rio Samala rises the wooded Mount *Zuñil*, which although locally called the "Volcano" in an emphatic sense, appears nevertheless to have long been lifeless. The same remark applies to *San Pedro* (8125 feet), near the south-west corner of Lake Atitlan, and to two of the three cones which ten miles farther on are disposed north and south transversely to the general trend of the system. The two northern members of this group (each 10,000 feet) show nothing but small terminal craters overgrown with dense vegetation. But the third —Mount Atitlan (11,723 feet)—has been several times in a state of unrest since the Conquest.

Fuego and Agua Volcanoes

In the same north-south direction are disposed the various members of the two igneous chains which rise above the central plateau of Guatemala, and terminate in the *Fuego* ("Fire") and *Agua* ("Water") on either side of the old and new capitals of the State. The northern cones, which are all extinct, culminate in *Acatenango* (13,616 feet), which is the highest point, not only in Guatemala, but in the whole of Central America. Fuego, which is not much lower (13,130 feet), was first ascended in 1860 by Schneider and Bescher, who came upon a yawning abyss, 2000 feet deep and 1400 feet across, developed on its southern flank. Fuego has been the scene of several tremendous outbreaks since the Conquest.

Agua, on the other hand, has long been extinct. Although less elevated (12,337 feet) than Fuego, it produces a more imposing effect, and is described by one observer as "the most lovely sight in the world." Formerly the crater was flooded, but in 1541 the upper rim giving way, the whole contents—some 35,000,000 cubic feet—were discharged down its flanks, burying the newly founded city of Guatemala in an avalanche of mud, slush, rocks, and debris of all kinds. The outburst, which occurred during the night, was accompanied by an earthquake, and "in the morning the remains of the city hardly appeared above the trees, rocks, and mud of the avalanche" (Brigham, *op. cit.* p. 389). It was then that the capital was removed to its present position some distance east of the "Old Town."

Beyond Agua the igneous system is still continued at a much lower elevation by the *Pacaya* group, where the highest cone falls below 8400 feet. It has been quiescent since 1775, although vapours are still ejected from the *Caldera* ("Cauldron"), a neighbouring crater, which, like those of so many of the Central American volcanoes, is flooded with a lakelet of pure water. All the other members of the system, which follow eastwards from Pacaya, are quite extinct, and the igneous chain itself is pierced farther east between Lake Amatitlan and Salvador by a transverse ridge culminating in *Mount Ipala* (4470 feet), which also terminates in a flooded crater.

The so-called "Sierras" in the eastern provinces—*Chama*, *Minas*, *Santa-Cruz*, *Copan*—are merely low ridges seldom rising above 2000 or 3000 feet, and serving chiefly as water-partings between the ramifying branches of the Usumacinta, Motagua, and other streams, which traverse the savannas on their northern and eastern course to the Gulf of Mexico.

While the geological framework of the land consists mainly of granites, interspersed with mica schists and porphyries, a conspicuous feature of the surface formations is the prodigious quantities of lavas, and especially pumice, which were ejected and strewn over vast spaces in Quaternary times. In some districts these deposits have a thickness of from 500 to 600 feet, and above them is a layer of yellowish earth, which in places is nearly 20 feet thick, and appears to have been formed by the disintegration of the underlying rocks. In this upper bed and in the underlying lavas are found the remains of those post-pliocene animals, such as the mastodon and *Elephas Colombi*, by which the age of this eruptive matter has been determined.

Hydrography—Rivers—Lakes

In Guatemala the main water-parting largely coincides with the axis of the igneous range, and consequently approaches so near to the western sea-board that the rivers flowing to the Pacific—*Suchiate*, *Esclavos*, *Michatoya*, *Paza*, and others—are mere coast streams with short, rapid courses, and quite useless for navigation. But on the long eastern slope are developed two considerable fluvial systems—the *Usumacinta* and the *Motagua*—the former draining north to the Gulf of Mexico, the latter east to Honduras Bay. The Usumacinta is the largest and most copious river in Central America, but belongs only in its upper reaches to the republic. Rising with numerous head-streams on the Altos in the very heart of the land, it collects the drainage of nearly one-half of the whole territory, flowing as the *Rio Chixoy*, or *Lacandon*, first north and then north-west to its junction with the *Rio de la Pasion* (*Chiesri*) from the east. After

entering the Mexican State of Chiapas, the Usumacinta is joined on its right bank by the *Rios Machaguita* and *Chacamas*, and farther on winds with a sluggish course over the low-lying plains of Tabasco. Here the main stream ramifies into two branches, one of which, the *Rio de la Palizada*, discharges into Campeche Bay close to the large *Laguna de Terminos*. The other, that is, the western branch, receives on its left bank the *Rio de Grijalva*, which also descends from the Guatemalan uplands, and a short distance below the confluence the united stream enters the Gulf of Mexico at the *Barra de Tabasco*. Between the two branches is thus developed a considerable delta, which is completely flooded during the periodical inundations, when the Usumacinta often rises in its lower course 30 or 40 feet above low-water level. For long distances in its lower and middle reaches it is navigable for canoes and balsas (barges), but, owing to the low bars and shifting sands of the delta, is quite inaccessible to sea-going vessels.

The Motagua, which has its sources on the central plateau near those of the Chixoy, flows entirely through Guatemalan territory in a normal easterly direction to Honduras Bay. Here is formed a small shallow delta, which is also obstructed by a bar, so that the main stream is inaccessible even to small craft at low water. But during the floods it becomes a broad, deep stream navigable for over 100 miles in a total length of about 300 miles.

Between the Motagua and Usumacinta flows the *Rio Potochic*, which on its easterly course to the coast at *Amatique Bay* traverses the large lake known as the *Golfo Dulce*, or *Izabal Lagoon*. This basin, either a marine inlet or an old fresh-water lake, has a depth of nearly 40 feet, and an area of over 250 square miles,

and would form one of the finest havens in the world but for the narrow, tortuous channel through which it communicates with Honduras Bay. Midway between the lake and the coast this channel expands into another basin, the *Golfete*, or "Little Gulf," beyond which it is navigable by small sea-going vessels for about 60 miles above Livingston, the port of entry at its mouth.

In the northern department of Peten the plateau is strewn with several other lacustrine basins which have no present seaward outflow, and of which the largest is *Lake Itzal*, or *Peten*. Although now completely landlocked, Peten, which has a depth of nearly 200 feet, seems to have formerly communicated either through the *Rio Hondo* with the coast north of Belize, or through the *Rio de la Pasion* westwards with the Usumacinta.

Other lakes occur in the south-western parts of the republic, which appear to be intimately associated with igneous phenomena. Such are *Amatitlan*, in the department of that name, south of the capital, and the much larger *Atitlan*, in the department of Solola, both now closed basins, but probably at one time draining through some of the neighbouring coast streams to the Pacific.

The peculiar charms of Atitlan appeal irresistibly to the imagination of all observers. "We climbed down to the Lago," writes Mr. Brigham, "by a path about 1200 feet in perpendicular descent. It was a league and a half from town to shore. We were in another climate. Oranges, sugar-cane, avocados, limes, jocotes, and other fruits that cannot bear the cold of the town above us, flourished here. Walled on every side by vast cliffs, and overshadowed by high volcanoes, there were yet fertile valleys opening on the Lago here and there. Streams of considerable volume pour into it

over rocky beds, or dash foaming down the high cliffs. Ten miles across was the ancient town of Atitlan, famed in legend and history. We stood in one of those mysterious places seemingly below the rest of the world, for we could see the water fall into this valley. But no human eye sees the outlet, nor are the waters, as in the valley of the Dead Sea, chiefly evaporated. The

VOLCANO AND LAKE OF ATITLAN.

surface is evidently of nearly the same level at all seasons. In the opinion of some observers, it is not improbable that this valley was an ancient crater, in the midst of which the volcano of Atitlan has risen—much as Vesuvius has sprung from the ancient Somma; but the more probable origin of the lake is that the rising volcanoes dammed up a valley. In the lava are many cavities, and possibly through these the surplus

waters flow, to reappear in the many copious springs of the southern shore" (p. 152).

Climate—Flora—Agricultural Resources

In Guatemala the same distinctions are observed as in Mexico between the three vertical zones forming the hot, temperate, and cold regions. On the plains along the sea-board, and in the low-lying hilly districts, there prevails a uniform tropical heat, with a mean annual temperature of from 90° to 94° F. On the uplands the dry period from February to April is followed by a rainy season from July to September, with an intervening transitional period lasting generally about two months. The elevated central plateau is deeply furrowed, like that of Mexico, by steep wooded barrancas or ravines. But this plateau formation is of relatively much less extent, and in the north-west is merged in the region of the Altos, which are comprised in the cold zone. The soil being largely of volcanic origin, would appear to be almost everywhere very fertile, while its products vary greatly according to the elevation of the land above the sea. On the higher uplands wheat, barley, and other cereals are grown in the vicinity of the sombre pine-woods. But the low-lying plains are clothed, especially on the Atlantic side, by a luxuriant vegetation, having all the characters of the tropical American woodlands.

The chief economical products are maize, sugar, indigo, coffee, cocoa, and cochineal. As in Mexico, maize is everywhere cultivated, yielding one annual crop in the temperate and cold zones, and two or even three in the hot coast districts. The sugar-cane can also be grown everywhere up to an altitude of about 5000 feet,

and this is also very nearly the extreme limit of coffee culture. Wheat, on the other hand, thrives only on the uplands above 5500 feet, while cacao, properly a tropical plant, scarcely ranges higher than 1600 feet. In the same zone, and even a little higher, rice, cotton, bananas, and indigo are cultivated, though nowhere in large quantities. Cacao, sugar, wheat, and cotton are mostly, if not altogether, consumed in the country, coffee and bananas alone being regularly exported.

The coffee plantations of Guatemala are situated chiefly on the lower slopes of the volcanic range facing the Pacific. This long tract of country which, like the neighbouring Mexican district of Soconusco, is remarkable alike for the splendour of its scenery, its fertile soil, and relatively dry and pleasant climate, has been carefully surveyed in recent years by Wetham, Stoll, Brigham, and other travellers. Despite the disadvantages presented by the lack of good communications, many foreigners have settled in this maritime region, and invested much capital in the coffee industry. The plantations lie mainly between 2000 and 4500 feet above sea-level, and have hitherto escaped the attacks of insect pests, showing that here all the conditions are highly favourable for coffee culture. The original stock was introduced from Arabia by French colonists at the beginning of the eighteenth century, after first testing its qualities in the West Indies. Coffee culture when properly managed gives good returns, and, according to some estimates, a plantation of 1000 shrubs, costing at the end of five years £5500, will yield a net profit of over £8000. Hence the area under cultivation is spreading, and the quantity exported rose from 620,000 cwts. in 1896 to 760,000 cwts. in 1898.

Of other economic plants—vanilla, rubber, henequen,

guava, ginger, oranges, cacao, coco-nut, banana, and plantain—perhaps the last two are the most important. Their cultivation has been greatly stimulated by Government bounties and the establishment of regular lines of steamers between Livingston and New Orleans. Of the two hundred recorded varieties of the banana two only, one red the other yellow, are raised for exportation. The former yields from 200 to 250 pods to the bunch, weighing unripe from 80 to 90 pounds. The plantain, which greatly resembles the banana, but is much larger and more curved, is always yellow, and has seldom more than 35 fruits to the bunch. But these are often 15 inches long, more palatable and nutritive than the banana. When dried they will keep from 20 to 30 years, and it has been calculated that 1600 square feet of rich land will yield 4000 lbs. of nutritive substance from plantains, which will support fifty persons, while the same land under wheat will support not more than two. The industry is very profitable, at least to the shippers, who buy 100 bunches for £8 at Livingston, and sell them for £25 at New Orleans.

Conspicuous amongst the forest growths are the mahogany and palms of the lowlands, and the pines and oaks of the uplands. Strangers are especially struck with one species of the oak, which is smaller and much softer than the European varieties, but bears acorns as large as the largest turkey eggs. Amongst the more costly woods prominent are the cedar, a species of palisander, the so-called rosewood, and the palmolatla, a close-grained yellow wood streaked with grey and brown veins.

Fauna

Apart from insects—ants, jiggers, fleas, mosquitoes—and fishes with which many of the rivers are well

stocked, animal life is on the whole comparatively scarce. Game is limited to the red-deer, peccary, javia, wild turkey, and pigeon. Monkeys, however, are fairly well represented, and amongst them is the attractive little white-faced *Cebus albifrons*. Other members of the family are the howling-monkey (*Mycetes stentor*), noisiest of nocturnal animals, and several small species, such as

CEBUS ALBIFRONS.

the *Simia apella*, *S. fatuellus*, and *S. capucina*, which feed on the wild fig and other fruits of the forest tracts. The manatee, which formerly frequented the Golfo Dulce, is now rarely seen on the coast of Guatemala, though still met with in British Honduras. The jaguar, largest of the beasts of prey, is not a dangerous animal in Guatemala, where he avoids man, and will not even attack a herd of peccaries. Yet he grows to a great size, and travellers speak of skins 5 to 6 feet long, exclusive of head or tail.

Alligators are not numerous, but iguanas abound, and are much prized for their flesh. Both fresh-water and sea turtles are also plentiful, the latter often weighing over 150 pounds, and supplying large quantities of meat, white and tender as the best veal.

Snakes are much less common on the Atlantic than on the Pacific side. All are popularly supposed to be dangerous, whereas three only—the rattlesnake, the coral, and the tomagoff—are really venomous, and these are rarely seen. Amongst the numerous species of fishes

JAGUAR.

are the saw-fish, with very long and sharp teeth; the Jew-fish, weighing several hundred pounds and edible; snappers, mullet, bone-fish, king-fish, and many others of which the local names alone are known. The bird family is represented by numerous species of humming-birds, parrots, paroquets, pigeons, tanagers, toucans, and the already described quetzel. Almost equally gorgeous is the plumage of the carpenter-bird—fiery red with silver or gold—and of a ringtail large as a dove with blue bill, green throat, red wings, and one large white-and-black feather in the tail.

Inhabitants

From the ethnical point of view Guatemala might almost be described as an Indian republic. Of the whole population about 1,000,000 are believed to be full-blood aborigines, while the rest—not much more than half a million—are nearly all *Ladinos*, as the Hispano-American Mestizos are here called. A mere fraction, chiefly settled in the capital and the other large towns, are of pure Spanish descent, and in 1898 all the other Europeans—planters, traders, and members of the learned professions—were estimated at rather less than 12,000. But the official language is Spanish, which is also spoken almost exclusively by the great majority of the Ladinos, who in fact generally regard themselves as representatives of the conquering race, and jointly with them hold the political power. Socially also they are the progressive element, and through their influence Spanish is slowly encroaching in all the more settled districts on the native languages. Whenever a group of aborigines are found to have discontinued the use of their mother tongue, or to have adopted Spanish as the general medium of intercourse, they are officially returned as Ladinos. As in so many other Hispano-American States, these half-castes thus continue to absorb all the native populations, and their claim to regard themselves as constituting the Guatemalan nationality in the strict sense of the term is already fully justified.

All are nominal Christians, who beneath outward forms retain many of the religious ideas of their pagan ancestors. In the churches tapers are lit in honour both of Michael and of the Dragon, while images of the heathen deities are hidden away under the high altar, so that they may receive a share of the prayers and

incense offered to the saints and angels of the Roman Calendar. In the rural districts solemn gatherings are held beneath the widespreading branches of some gigantic ceiba-tree, which is itself either worshipped or else held in awe as the abode of some ancient divinity still potent for good or evil. The spiritual powers are even divided into two classes, one introduced by the whites, over whom they still preside, the other comprising the old national pantheon, who concern themselves exclusively with the interests of the natives.

Maya-Quichés—Pipils

Some of these ideas have been disseminated amongst the aborigines themselves, the great majority of whom are members of the widely diffused Maya-Quiché race, and still speak numerous idioms, all sprung from an original Maya-Quiché stock language. The Mayas proper are represented mainly by the *Itzas* and the *Lacandons* of the Peten district, where, although greatly reduced in number, they still form two independent communities about the borderlands between Yucatan and Guatemala. In fact the Itzas, who are pure Mayas, came originally from the great city of Chichen-Itza in Mayapan, and settled some three hundred years ago in the district of Lake Peten, to which they have given the alternative name of Lake Itzal. Here they have hitherto preserved their political freedom, while maintaining friendly relations with the Guatemalan authorities, and with their Lacandon kinsmen, who dwell farther south in the wooded district between Lake Peten and the Rio de la Pasion affluent of the Usumacinta.

At the time of the discovery the most thickly peopled part of the country lay, as it still does, in the

south-western region between the present capital and Lake Atitlan east and west, and from about 15° N. lat. southwards to the Pacific. This region was divided between the three rival nations of the *Quichés*, whose capital was Utatlan (now Santa Cruz), the *Cachiquels* (capital Iximché), and the *Sutughils* or *Tzutohils* (capital Atitlan). These were undoubtedly the most powerful and most civilised of all the Quiché peoples. But they were found occupying hostile camps in 1524 when Alvarado arrived, and by taking advantage of their dissensions rapidly reduced most of the land. He however failed to subdue the *Cakchis* and *Poconchis*, two other powerful Quiché nations who dwelt farther north about the head-waters of the Rio Potochic. Their submission was later brought about by the famous "Apostle of the Indians," Bartholomew de las Casas, bishop of the neighbouring province of Chiapas, and *Tezulutlan*, "Land of War," as their territory was called, then became the land of *Vera Paz*, "True Peace," by which name it has since been known.

Besides the Maya-Quichés a considerable portion of South Guatemala was, and still is, occupied by the *Pipil* nation, who were Aztec or Nahua intruders from Anahuac. Nothing is known of the time and circumstances attending this Mexican settlement, which, however, would appear to have been made at least two hundred years before the Spanish Conquest. The Pipils have lost all memory of the event, and they speak an Aztec dialect presenting some marked peculiarities, for the development of which time must be allowed. Originally their domain was very extensive, stretching continuously from the present department of Escuintla round the Pacific sea-board right into Salvador. But in later times the Pipils were encroached upon by the *Pocomans*, another

numerous Quiché people, whose territory lay about the sources of the Motagua near that of the Quichés. Thus it happens that the Pipils now form two isolated groups, one in Escuintla, the other in the neighbouring republic. The proper form of the national name appears to be *Pipiltzin*, "superior," and their position on the coast-lands would seem to point at an invasion of the Quiché domain by these "superior people" arriving from the sea.

But their superiority must be regarded rather as of a political than of a social or intellectual character. Reference has already been made to the general culture of the Maya-Quiché peoples in connection with their relations to the Toltecs and the Aztecs, and it has been shown that their civilisation was probably antecedent to that of the Mexicans, that, in fact, they were the Toltecs, overthrown and driven south by the Nahua hordes penetrating into Anahuac from the north. In Guatemala are found some of their finest monuments, such as those brought to light by Mr. Maudslay at the ruined cities of *Quirigua* on the Rio Motagua, and of *Copan*, near the sources of the Rio Potochic in Alto Vera Paz. In recent years extensive explorations have also been made amid the remains of another buried city in Señor Alvarado's Pompeii plantation on the slopes of the Volcan de Agua. Amongst the remarkable objects here discovered are some fine glazed ware, several handsome vases engraved and painted in bright colours, domestic utensils like those still used by the natives, stone weapons and idols, and ornaments of turquoise and *chal-chivilli*, a deep green gem formerly worn by Indian chiefs. Some of the clay statuettes betray a high sense of humour, in striking contrast with the tragic masks carved on other heads. Skeletons also have been found over six feet in length, some straightened out, some in sitting attitudes, some

bent up and deposited in hugh vases like those in South America and India. The skulls have broad high foreheads, prominent cheek bones, and projecting chins, and all have chal-chivilli stones in the shape of tongues inserted between the teeth. The type thus differs considerably from that of the present Quiché peoples, who are rather undersized, with strong, thick-set frames,

THE GREAT TURTLE OF QUIRIGUA.

large nose, and low forehead. The hair is black, lank, and long, as amongst nearly all the aborigines, and it appears never to turn grey. Like the well-set white teeth, it keeps its colour to the end, which, however, is reached much sooner than amongst other races. The natives, in fact, age rapidly after their thirtieth year, and those who arrive at the forties are quite decrepid. This short term of existence has been attributed to their monotonous

lives, unrelieved by any incidents of a stimulating nature. It is noteworthy that few of the aborigines can be induced to take any part in local "politics," and this may be one reason why all the attempted revolutions have failed since 1871. Indeed the era of political disturbances seems to be drawing to a close, and even the Ladinos are beginning to appreciate the blessings of a wise and liberal administration, such as that which has been established by President Estrada Cabrera.

Topography

Owing to the great preponderance of the aborigines, who live mostly in small rural communities, large towns are rare in Guatemala. Even the departmental capitals are for the most part mere villages, and there are altogether only five places with populations exceeding 10,000.

The capital, *Guatemala la Nueva*, "New Guatemala," has shifted its position more than once. *Iximché*, the chief Cachiquel settlement, was chosen by Alvarado in 1524 as the seat of government, but this was soon after removed to *Almolonga*, where was founded the first city of Guatemala—*Ciudad Vieja*, the "Old Town." After the tremendous avalanche of 1541 (see above) another shift was made to a safer position a little farther north, where Alvarado founded a third capital in 1542. This was named *Santiago de los Caballeros la Nueva*, the "New," but became *Antigua*, the "Ancient," when it was destroyed by the disastrous earthquakes of 1773. A final move was then made to the present capital, which stands on an elevated plateau 25 miles north-east of Antigua. The term "Guatemala," a Spanish softening of the Indian *Quauhtemalan*, was soon extended to the

whole region, which in early colonial times was already known as the "Kingdom of Guatemala." The modern Guatemala, which is by far the largest city in Central America, stands about 5000 feet above sea-level, but although well laid out with broad rectangular streets and supplied with good water by two aqueducts, it is not a healthy place. The loose volcanic soil, which gives immunity from fever, causes dangerous lung complaints by the great clouds of dust blown about by every puff of wind, especially during the dry season.

Guatemala is connected through *Escuintla* with *San José*, on the Pacific, by a railway 85 miles long, and by another with the neighbouring seaport of *Iztapa*. A line 32 miles long also runs

CITY OF GUATEMALA.

from *Champerico*, another small seaport on the coast near the Soconusco frontier, inland to *Retalhuleu*, capital of the department of that name, and thence to *San Felipe*.

To the Pacific seaports of Champerico and San José corresponds on the Atlantic side the free port of *Livingston*, which owes its English name to a noted jurist, to whom the framing of the Guatemalan legal code was

QUEZALTENANGO.

entrusted. Livingston stands at the mouth of the Rio Dulce, on Amatique Bay, and although at present a small place, gives every prospect of future expansion. It is regularly visited by the steamers plying along the shores of the Gulf and Caribbean Sea, and American skippers here ship bananas and other produce for the New Orleans market.

Besides the capital there are a few places in the

interior which are noted either for their historic associations or for their present prospects. Such is *Santa Cruz de Quiché*, capital of the department of like name, which stands on or close to the site of *Utatlan*, the capture of which by Alvarado in 1542 signalled the downfall of the great Quiché nation. *Totonicapan* and *Quezaltenango*, which give their names to two neighbouring departments, are also historical places, which have survived the destructive wars of Alvarado and his Tlaxcaltec allies. Totonicapan is now a thriving centre of peaceful industry, such as weaving, pottery, cabinet work, and musical instruments. Quezaltenango, the "Green Feather Town," still keeps alive some of the old national arts, and here are prepared the gold-embroidered cloaks, masks, and plumed headgear worn by the natives at their festive gatherings.

Government—Finance—Trade

After the War of Independence the Central American States continued to form part of a single political system, called the "Confederation of Central America," from 1821 to 1847. On 21st March 1847 Guatemala set up for itself as an independent republic, but its present Constitution dates only from December 1879, and has since been modified in 1885, 1887, and 1889. It provides for a legislative National Assembly of one Chamber, the members of which are elected by universal suffrage for four years, in the proportion of one for every 20,000 inhabitants. The executive is entrusted to a President elected for six years, and not eligible for the next ensuing period. He is assisted by the heads of six departments—Foreign Affairs, Justice, Public Credit, Public Instruction, Fomento, and War.

Roman Catholicism is the prevailing religion, but there is no State Church, and all creeds enjoy complete freedom of worship.

Education is also free and compulsory. In 1896 there were 1266 Government schools, with a total attendance of 64,000, besides 56 private and secondary schools, 6 institutes and normal schools.

The yearly budget usually shows a considerable deficit, as in 1896 when the revenue was £3,030,000, and the expenditure £3,500,000. In the same year the external debt (£1,482,000) and other public liabilities amounted to £3,215,000.

Trade is increasing, the imports having advanced from £1,300,000 in 1893 to £1,800,000 in 1897, and the exports from £3,800,000 to £4,000,000 in the same years. The chief imports are cottons, cereals, wine, beer and spirits, provisions; exports—coffee, bananas, hides.

The regular army numbers 7000 of all arms, and there is an effective of 57,000 men and 30,000 reservists.

CHAPTER X

SALVADOR

Extent—Area—Population—Physical Features—Volcanic System—Eruptions—Earthquakes—Rivers—Lakes—Climate—Flora—Agricultural Resources—Inhabitants—Mestizo Nomenclature—Topography—Government—Finance.

Extent—Area—Population

THIS State takes its name from its capital, San Salvador, the *San* being omitted to avoid confusion between the two expressions. It is absolutely the smallest, but relatively the most populous of all the Isthmian republics. In these respects the contrasts may even be called surprising, especially when it is considered that much of the igneous surface is so unstable as scarcely to be a fitting abode for man. Salvador is also the only Central American State which is entirely confined to the Pacific sea-board, without any access to the Atlantic. It forms an irregular quadrilateral which is completely enclosed between Guatemala, Honduras, and the ocean, extending for about 190 miles from the Guatemalan frontier to Fonseca Bay, with a mean breadth of scarcely more than 50 miles between Honduras on the Balsam Coast. Within these narrow limits it has an area of a little over 7000 square miles, being smaller than the

principality of Wales by just 200 square miles, and less than one-third the size of Costa Rica, the next smallest of the Isthmian States. But for population, officially estimated in 1896 at over 800,000, it ranks immediately after Guatemala, having twice as many inhabitants as Nicaragua and Honduras, although the former exceeds it seven times and the latter six times in superficial area. For administrative purposes Salvador is divided into fourteen departments, with areas, populations, and chief towns as under :—

Departments.	Area in sq. miles.	Pop. (est.)	Chief Towns.	Pop.
Ahuachapam	490	40,000	Ahuachapam	12,000
Santa Ana	600	90,000	Santa Ana	31,000
Sonsonate	500	50,000	Sonsonate	9,000
La Libertad	490	55,000	Santa Tecla	14,000
San Salvador	460	90,000	San Salvador	29,000
Chalaltenango	750	60,000	Chalaltenango	6,000
Cuscatlan	380	65,000	Suchitoto	14,000
La Paz	490	45,000	Sacatecoluca	5,500
San Vicente	490	45,000	San Vicente	9,000
Cabañas	200	40,000	Sensuntepeque	9,500
Usulutan	700	80,000	Usulutan	7,000
San Miguel	720	45,000	San Miguel	24,000
Morazan	480	50,000	Gotera	2,500
La Union	480	45,000	La Union	3,000
Total	7230	800,000		

Physical Features—Volcanic System

After leaving Guatemalan territory the main range and the volcanic system continue to diverge, the former along or near the Salvador-Honduras frontier, the latter nearly parallel with and at a short distance from the Pacific shore line. Thus it is that the greater part of Salvador is essentially of igneous formation, while all the extinct and active or quiescent cones continue the

Guatemalan system in an almost unbroken line all the way to Fonseca Bay. Owing to this disposition of the two ranges, the whole region is also clearly divided into two physical zones—the strip of coast-lands between the sea and the volcanic chain, and the inland plateau between this chain and the frontier Sierras towards Honduras. Seen from the Pacific, the plateau, comprising the greater part of the country, presents along its seaward escarpments the aspect of a huge rocky wall upheaved by natural forces, but separated from the western sea-board by a long line of igneous crests. This peculiar formation would be explained on the assumption that the ocean waves formerly penetrated to the foot of the inland mountain barrier, and that the low coast range, averaging scarcely more than 2000 feet in height, was subsequently upheaved by underground agencies.

Although generally lower than the Guatemalan volcanoes, some of those which rise at intervals above this coast range—the *Madre del Volcan*, as it is called—attain considerable altitudes. In the subjoined table all the Salvador cones are arranged in their order from west to east, with their heights and present igneous condition :—

Volcanoes.	Present State.	Height in Feet.
Apaneca	Extinct	5826
Santa Ana	Active	6660
Izalco	Active	6000
San Salvador (Vandegehuchte)	Active	6182
Ilopango	Active	3400
San Vincente	Quiescent	7600
Tecapa	Extinct	?
Usulutan	Extinct	?
Chinameca	Quiescent	5000
San Miguel	Active	7100
Conchagua	Quiescent	3915

Eruptions—Earthquakes

Izalco, like the Mexican Jorullo, is of quite recent origin, having suddenly made its appearance in 1770. The ground where it now stands had previously been studded by some of those curious *ausoles* or volcanic vents which occur in many districts, but are numerous especially near the Guatemalan frontier, and display every transition between fumaroles, gas jets, hot springs, and mud volcanoes. Here was also a cattle ranche, where the people began to be alarmed by underground rumblings and earthquake shocks, which increased in loudness and intensity till 23rd February 1770, when the earth opened near the farmstead, emitting fire, smoke, and lavas. The display grew daily worse and worse, the flow of lava being now and then varied by great showers of sand and stones. Since then the disturbances have never quite ceased, and the ejecta have now formed a cone about 6000 feet high, which discharges at intervals of ten or twenty minutes dense smoke, cinders, and scoriæ, accompanied by loud explosions. At night the clouds of overhanging smoke are lit up by the molten mass within, while red-hot stones shoot through this darker mass and seem to ignite the vapours, which emit coruscations like lightning flashes. From this incessant display Izalco has been named *El Faro de Salvador*, "The Lighthouse of Salvador."

The ruin caused by the eruptions of the active volcanoes is often increased by tremendous earthquakes, such as that of 16th April 1854 at San Salvador, when the earth began to heave with a billowy motion of such intensity that in ten seconds the whole city was levelled with the ground. The crashing of houses and churches stunned the ears of the terrified inhabitants, while a cloud of dust from the falling ruins enveloped them in a

pall of impenetrable darkness. Not a drop of water could be had, as all the wells and fountains had run dry or were filled with debris. The clock tower of the cathedral carried a great part of that edifice with it in its fall. The towers of the church of San Francisco crushed the episcopal oratory and part of the palace. That of San Domingo was buried beneath its belfries, and the College of the Assumption was entirely ruined. The new and beautiful edifice of the University was demolished, the church of the Merced separated in the centre, and its walls fell outward to the ground. The public edifices of the Government and of the city shared the common destruction.

But of all the active volcanoes the largest is San Miguel, which rises to a height of considerably over 7000 feet near the eastern extremity of the system. It is specially noted for its symmetrical form and variegated colours, passing from the deep green of its forest-clad base through the lighter tints of the grasses on its higher slopes to the deep red scoriæ and greyish white of the summit. When it was scaled by Gutierrez in 1848, the large crater, which is of fathomless depth, presented the aspect of a vast abyss of molten lavas, over which played a pale, sulphurous flame, reflected again and again from the charred and blistered rocks of the encircling walls.

Rivers—Lakes

Salvador belongs entirely to the Pacific slope, and most of the land is comprised in the basin of the *Rio Lempa*, its only important fluvial artery. The Lempa has its farthest sources in Guatemala, and, after receiving the overflow from the frontier *Laguna de Guija*, flows through the north-western provinces in a normal easterly direction. Beyond the junction of its largest tributary,

the *Sumpul*, which descends from the Honduras uplands, and is by some geographers regarded as its true upper course, the Lempa is joined on its left bank by the *Rio Tonola*, another large affluent flowing also from Honduras. At the confluence the main stream bends round abruptly southwards, and enters the Pacific through a broad island-studded estuary between the two large coast lagoons of *Jaltepeque* and *Jaquilisco*. Here it is obstructed by a shallow bar with scarcely more than 6 feet of water at any time, and is thus inaccessible to sea-going vessels. But above the bar there is a depth of over 20 feet during the periodical floods, and the lower reaches are navigable by river steamers as far as the Tonola confluence. The Lempa, which has a total length of nearly 200 miles, drains an area of about 6000 square miles, and has a mean discharge of 20,000 cubic feet per second.

Besides the Guija lagoon there is another lacustrine basin—*Lake Ilopango*—which lies about 6 miles east of the capital, and is undoubtedly of volcanic origin. It presents the outlines of a circular crater 25 square miles in extent, and enclosed by steep rocky walls. Ilopango is subject to frequent oscillations of level, sometimes sending its overflow through a deep gorge to the *Jiboa*, a small Pacific Coast stream, sometimes rapidly subsiding within the encircling cliffs. In 1879 Ilopango was the scene of violent igneous disturbances, during which sulphurous vapours and lavas were discharged as from a real crater, while several volcanic islets appeared above the surface and after a little while again subsided. One, however, still remains in the centre of the lake, and occasionally ejects great volumes of smoke. Earthquakes are also of frequent occurrence, and in 1879 over 600 shocks were recorded.

Climate—Flora—Agricultural Resources

In its climatic and biological relations Salvador forms, in a general way, a natural extension of the conterminous parts of Guatemala. But there are dif-

PERUVIAN BALSAM.

ferences, due to local causes, by which the tropical heats are modified in each of the physical zones. Thus the glass, which on the hot, low-lying sea-board ranges between 75° and 85° F., falls on the outer volcanic ramparts to 72° or 74°, and again rises to 85° or 90° in the deep valley of the Rio Lempa, sheltered both

from the Atlantic and Pacific breezes by the Honduras uplands and the Madre del Volcan. Hence the coast and central districts are the least salubrious parts of the country, and the population, as in Guatemala, is concentrated chiefly on the dangerous igneous plateau. The heavy rains, brought by the *Vendavales*, or southern marine winds, prevail chiefly between May and September, and are occasionally accompanied by destructive cyclones. But downpours occur even in the dry season, from October to April, when the fierce *nortes*, here called *terrales*, blow across the Isthmian region and are much dreaded by the fishers on the Pacific Coast.

Characteristic members of the vegetable world are the numerous resinous and medicinal plants, and especially the balsam which gives its name to the Salvador section of the Pacific Coast, and is known as "Peruvian balsam," because in colonial times it reached Spain by the Callao route. Indigo, for which Salvador was at one time famous, is now little grown, the industry having been ruined by the competition of the cheap aniline dyes of modern chemistry. Its place is now taken by coffee, sugar, and tobacco, which, with silver and balsam, form the chief items in the list of exports. Of imports the more important are cottons, silks, hardware, and spirits, and the foreign exchanges show a steady increase, having advanced from £1,800,000 in 1892 to £2,200,000 in 1897.

Inhabitants—Mestizo Nomenclature

Except a few semi-independent groups about the Honduras frontiers, and the Pipils, who are of the same Aztec stock as those of Guatemala, all the aborigines are now merged with the early Spanish settlers in a common Ladino population of Spanish speech and

culture. Pure Europeans of various nationalities number about 20,000, and there is also a distinct Negro strain, due to the black slaves imported before the emancipation. Thus in Salvador, as in most of the other Isthmian lands, all the transitions are observed between the American, European, and African types. For the various crossings there is a rich local nomenclature, which is current also in the neighbouring States, but differs considerably from that of South America, as may be seen from the subjoined list:—

Crosses.	Father.	Mother.
Ladino (Mestizo)	Spaniard	Indian.
Castiso	Spaniard	Ladina.
Español	Castiso	Spanish.
Mulato	Negro	Spanish.
Morisco	Spaniard	Mulato.
Albino	Morisco	Spanish.
Tornatras	Albino	Spanish.
Lobo (Wolf)	Negro	Indian.
Caribujo	Lobo	Indian.
Barsino	Coyote (Indian)	Mulato.
Grifo	Lobo	Negress.
Albarazado	Coyote	Indian.
Chaniso	Coyote	Ladina.
Mechino	Coyote	Loba.

Topography

Notwithstanding the relative density of the population —over 100 to the square mile—urban centres are not numerous, Salvador being essentially an agricultural country, in which most of the inhabitants are dispersed in villages and hamlets over the rural districts. There are only three places with populations of over 20,000—Santa Ana in the extreme west, San Salvador near the centre, and San Miguel in the east, not far from Fonseca Bay. *Santa Ana*, at present the largest city in the

State, is also the chief agricultural centre, occupying an important position on the main highway between Guatemala and the capital in the extremely fertile department to which it gives its name. The neighbouring district of *Metapan*, north of the Guija lagoon, is rich in minerals, such as iron, silver, copper, and zinc, which, however, are little worked. Santa Ana forwards its coffee, sugar, and other produce through *Acajutla*, which is the largest seaport in the republic, and is connected by rail with *Sonsonate*, capital of the State of like name.

San Salvador, capital of the republic, was originally founded in 1525 by Alvarado, brother of the conqueror of Guatemala, some distance from its present position, under the shadow of the restless San Salvador volcano. A more dangerous site could scarcely have been selected, and although the place was twice destroyed by earthquakes during the nineteenth century, its inhabitants have always returned, and still cling to their beloved city with a tenacity which to strangers looks like infatuation. It lies about 2300 feet above the sea, in a fertile district covered with plantations, and communicates by a good highway with its port of *La Libertad*, a dangerous roadstead on the Balsam Coast.

Although a populous place with over 20,000 inhabitants, *San Miguel*, capital of the department of like name, is little more than an overgrown rural settlement, depending entirely on the agricultural resources of the district. These, however, are considerable, and here is held a large fair much frequented by dealers from far and wide. *La Union*, the seaport of San Miguel, stands on a sheltered inlet in Fonseca Bay near the Honduras frontier.

Government—Finance

On the dissolution of the Central American Federation in 1853 Salvador became an independent republic, although its present Constitution dates only from the year 1864, and has been since modified in 1880, 1883, and 1886. The legislative power is vested in a Congress of one Chamber, comprising 70 deputies, 42 of whom must be owners of real estate. They are returned by universal suffrage for one year, so that the country is kept in a constant state of excitement by the parliamentary elections, which to strangers visiting the country seem to be continually going on. The executive functions are vested in a President, whose tenure of office is limited to four years. He is assisted by four ministers for the departments of the Exterior, Justice, Worship, and Instruction. An attempt was made to further modify these arrangements in September 1896, when an international treaty was ratified between the three independent States of Nicaragua, Honduras, and Salvador, constituting themselves, for the purposes of foreign affairs, a single State or Confederacy, under the official title of *La Republica Major de Centro-America.* But the agreement, which had excited the fear and jealousy of the other Isthmian powers, lasted only a little over two years, having been dissolved under pressure on November 1898. At the same time a military revolt was brought about by General Tomas Reglado, who proclaimed himself Dictator, and demanded to be recognised as President. Other risings, often attended by much bloodshed, had preceded and have followed this event, so that the period of revolutions has not yet closed for the otherwise prosperous little republic of Salvador.

Education is both free and compulsory, and in 1894

there were nearly 600 primary schools, besides several higher institutions and a national university, with a collective attendance of about 33,000.

Despite the political disturbances, which seem to cause little interruption to general business, the finances are in a satisfactory state. The revenue has advanced from £800,000 in 1890 to £2,000,000 in 1896, and the expenditure from £1,090,000 to £1,900,000 for the same period. In 1896 the external debt was only £254,000, and the internal £1,600,000, which compares well with the financial condition of some of the sister republics.

CHAPTER XI

HONDURAS AND BRITISH HONDURAS

I. Honduras :—Extent—Area—Population—Physical Features—Plains and Uplands—Volcanoes—Fonseca Bay—Mineral Wealth—Rivers—Lake Yojoa—Climate—Flora—Agricultural Resources—Inhabitants—Ladinos—Aborigines—Topography—Ruins of Copan—History—Government—Finance.

II. British Honduras :—Boundaries—Extent—Population—The Cockscomb Mountains—Agricultural Resources—Trade—Railway Projects—Belize—History—Administration—The Mahogany Industry.

I. Honduras

Extent—Area—Population

This State, third in size of the Isthmian republics, is bounded on the west and south-west by Guatemala and Salvador, and is conterminous eastwards with Nicaragua. On the Atlantic side it has an extensive coast-line facing the Gulf of Mexico, and extending from the Gulf of Honduras on the Guatemalan frontier for about 400 miles nearly to Cape Gracias-à-Dios. But the land tapers rapidly southwards in the direction of the Pacific, and here the coast-line is contracted to about 60 miles, enclosing the greater part of the magnificent inlet of Fonseca Bay. Honduras thus presents the outlines of an irregular triangle, with its apex on the Pacific and its base on the Atlantic Ocean. From the

imperfect surveys that have hitherto been carried out, the total area is roughly estimated at about 43,000 square miles, with a collective population (1896) of 400,000, distributed over the fifteen administrative departments as under:—

Departments.	Area in sq. miles.	Pop. (1896).	Chief Towns.
Tegucigalpa	2,000	63,000	Tegucigalpa.
El Paraiso	1,000	20,000	Yuscaran.
Choluteca	1,000	47,000	Choluteca.
Valle	3,000	15,000	Nacaome.
La Paz	500	22,000	La Paz.
Comayagua	1,000	19,000	Comayagua.
Yoro	5,000	16,000	Yoro.
Cortes	3,000	21,000	San Pedro.
Sta Barbara	3,000	35,000	Sta Barbara.
Copan	2,000	39,000	Sta Rosa.
Gracias	2,000	30,000	Gracias.
Intibuca	400	20,000	La Esperanza.
Olancho	10,000	34,000	Olancho.
Colon	9,000	5,000	Trujillo.
Las Islas	160	14,000	Roatan.
Total	43,060	400,000	

Physical Features—Plains and Uplands

Although accurate surveys are still wanting, Honduras has been traversed by explorers, and especially by naturalists, in all directions, and from their descriptions its main physical features are fairly well established. It may be described, broadly speaking, as a somewhat hilly country of moderate elevation, sloping mainly towards the Atlantic, and traversed in various directions by mountain ranges or short ridges, all generally called sierras, which branch off from their common base in the central plateaux. But all these elevated heights are entirely interrupted by the great plain of *Comayagua*, which is a conspicuous feature of the land, both from

the physical and economic stand-point. It is intersected by the two fluvial valleys of the Rios Humuya and Goascoran, the former flowing due north to the Atlantic, the latter due south to the Pacific, so that the courses of both rivers jointly present a deep depression, which extends from ocean to ocean, and clearly indicates the direction of a marine channel flowing at one time between the Atlantic and the Pacific. The two streams take their rise on the same plateau, where their farthest sources are separated only by a narrow ridge of moderate elevation, which forms the southern limit of the Comayagua plain itself. In its greatest extent this plain has a length of about 40 miles, with an average breadth of from 5 to 15 miles, its longest axis running due north and south, and thus coinciding with the general trend of the two fluvial valleys. Northwards Comayagua is separated by a low line of hills from the *Espino* district, another plain of considerable extent, both together forming a delightful region which abounds in natural resources, and comprises about one-third of the country between Honduras and Fonseca Bays.

Eastwards the Comayagua district is skirted by an elevated range, the northern section of which takes the name of the *Sierra de Comayagua*, while the southern is known as the *Sierra de Lepaterique*. North-east of the northern section is developed the prominent group of the *Sulaco Hills*, which rise nearly in the centre of the republic and send their running waters to a number of streams flowing in the most opposite directions. Along the foot of the hills stretch the grassy upland plains of *Plancho* and *Yoro*, which afford rich pasturage to some of those magnificent herds of cattle for which the Isthmian lands are so justly celebrated.

The rivers on the slopes of the central ranges wash

down gold; but the greater part of the extensive tracts lying between the Sierra Sulaco and the Atlantic Ocean —that is to say, nearly half of the whole land—is still almost exclusively inhabited by a number of semi-independent Indian tribes. In fact, this region is at present very little known, although explorers describe it as generally fertile and rich in minerals. A section of the northern coast lies very low, and is densely covered with large timber, mahogany especially growing in large quantities. But farther east the land is more elevated, and here the sierras approach at some points quite to the coast. The *Omoa* range, with its culminating peak, probably over 10,000 feet high, towers above Amatique Bay, while the *Congrehoy* and *Poyas* ranges are almost washed by the Atlantic waves. Their crests, rising from 6000 to over 8000 feet in altitude, form conspicuous landmarks far seawards, and were sighted by the first Spanish settlers in Cuba before the mainland was reached. But in many places the coast shoals very gently, and the soundings of the early navigators revealed such slight depths, especially in the Amatique and other inlets, that the neighbouring waters were described as "honduras," that is, *shallows*, a term afterwards extended to the mainland itself. Beyond Cape Cameron the shoaling waters extend all the way to the *Mosquito* Bank, which projects for no less than 134 miles in the direction of Jamaica. It has a mean depth of scarcely more than 120 feet, while the submarine bed at Honduras Bay is 300 feet deep, but everywhere strewn with coraline reefs, banks, and granite islets, which here and there rise above the surface. These small insular groups, the largest members of which are *Roatan*, *Utila*, *Elena*, *Bonaca*, and *Barbareta*, are collectively called the *Bay Islands*. Roatan is over 30 miles

long, but only 1 broad and 800 feet high, while Bonaca or Guanaja, identified with the *Isla de Pinos* of Columbus, rises above its pine-clad granite slopes to a height of 1200 feet.

Volcanoes—Fonseca Bay

Volcanic formations are almost entirely absent on the Atlantic slope, but reappear on the Pacific side. Here the Salvador system is continued right into Fonseca Bay, where *Sacate Grande*, largest of the igneous islets, rises to a height of 2000 feet. The neighbouring *Tigre* islet, though smaller, is over 600 feet higher. Both of these cones are extinct, as are also those of the Bay Islands (1000 feet) on the north coast, while *Congrehoy*, farther inland, is described as quiescent. It is by far the most elevated of all the igneous peaks, having an altitude of over 8000 feet. Although presenting every appearance of a marine inlet, Fonseca Bay seems to be little more than a flooded depression to which the sea gained access through a subsidence connected with the underground agencies in this igneous district. It is nowhere more than about 60 feet deep, but generally so shallow that it is accessible only to sea-going vessels of light draught.

Mineral Wealth

Reference has above been made to the auriferous sands washed down by several of the upland streams, and there can be no doubt that many parts of the country are richly mineralised. In this respect Honduras certainly outstrips all the other Isthmian lands. Silver ores are exceedingly abundant, especially on the Pacific slopes, and amongst some of these ores are chlorides of

remarkable richness. The gold washings of the Olancho district have already attracted foreign capital, and are now being worked by several companies. Copper deposits occur, often in association with silver. Iron in the form of magnetite is found, often with such a high percentage of pure metal that it may be worked without smelting. Mention is also made of tin, zinc, and antimony, while extensive beds of lignite have been discovered in the department of Gracias, where are also found the gems known as Hondureñan opals.

Rivers—Lake Yojoa

Besides the Humuya and the Goascoran, representing an old oceanic channel, Honduras is watered by several other streams, nearly all of which trend northwards to the Atlantic. One of the most copious is the *Chamlico* (*Chamelicon*), which descends from the *Merendon* heights, and for about 170 miles follows a course nearly parallel with the neighbouring Motagua within the Guatemalan frontier. In its lower reaches it communicates during the periodical inundations with the still more copious *Ulua*, which is by far the largest river in the republic. In its catchment basin, which comprises about 14,000 square miles, or one-third of the whole territory, are collected all the running waters in the western districts between the Merendon and *Chile* ranges. The Humuya itself belongs to this fluvial system, at least in its lower reaches, and the main stream also receives the overflow of the large *Lake Yojoa* indirectly through the *Santiago* or *Venta* from the west. The Yojoa lacustrine basin, the chief reservoir of the Rio Ulua, presents some remarkable features, which are probably of a unique character. The *Lago de Taulebé*, as it is also called,

has somewhat the outlines of a crescent-shaped flooded upland valley, which in the dry season appears to be completely landlocked, with no visible outlet anywhere. But during the rains it rises to a great height above low-water level, and then discharges its flood waters, not through one emissary, like most lakes, nor through two in opposite directions, like Dilolo (to the Zambesi and the Congo) and a few others, but through several, all in the same direction. The largest of these outlets is the *Jaitique* (*Rio Blanco*), which at high water flows from the south-eastern extremity of the lake to the *Rio Santa Barbara*, which is a tributary of the Santiago branch of the Ulua. All the other emissaries also join the Santa Barbara, but through underground channels which they have excavated in the intervening limestone rocks. As many as nine of these subterranean streams have been enumerated, every one of which ultimately reaches the same upper affluent of the Ulua during the rains, while at other times the Yojoa is an upland tarn with no outflow.

Yet with all these contributions the Ulua itself is not accessible to sea-going vessels, being completely blocked at its mouth by a bar with a depth of scarcely more than three or four feet at any time. But inside the bar the lower reaches are navigable by river steamers of light draught as far as the confluence of the *Sulaco*, which joins the right bank from the east.

In the direction from west to east the Ulua is followed by the *Romano* (Aguan), which after a course of nearly 130 miles reaches the coast through two mouths between Capes Caxinas (Honduras) and Cameron. Farther on the eastern districts are traversed by the long and copious *Rio Patuca*, which has developed a small delta between the two coast lagoons of *Brus*

(*Brewer*) and *Caratasca* (Cartago). Like the Ulua and all the other Honduras rivers, the Patuca is obstructed by a shallow bar, above which it is navigable by river craft as far as the romantic gorge of the *Portal del Infierno* ("Hell-Gate"), through which it forces a seaward passage from the Misoco and Chile uplands.

Climate—Flora—Agricultural Resources

Standing at a mean elevation of probably over 3000 feet, Honduras, despite its low latitude,—between 14° and 16° N.,—enjoys a relatively temperate climate everywhere except on the moist low-lying coast-lands. The Atlantic sea-board especially, being exposed to the rain-bearing *nortes* from the Gulf of Mexico, is hot, humid, and insalubrious. Here the yearly rainfall certainly exceeds 100 inches, while the temperature seldom falls below 70° F., and often stands at 100° and upwards in the shade, whereas the mean for the interior of the country ranges from about 60° to 70°. Hence the climate of the greater part of the territory is one of the healthiest and most equable in the world.

On the uplands the prevailing vegetation is herbaceous, and here the extensive plains of Comayagua and Olancho, being covered with succulent grasses, supply an abundance of pasture for the numerous herds of horned cattle already referred to. But the hot and marshy Atlantic coast-lands are clothed with magnificent forest growths, including such valuable timbers as mahogany, rosewood, cedar (*Bursera*), logwood, and brazil-wood. Sarsaparilla and several other medicinal plants also run wild, and continue to be exported in considerable quantities. But the indigo industry, killed by the modern aniline dyes, has declined, and is replaced by fruits, such as bananas,

plantains, coco-nuts, pine-apples, for which there is a

PLANTAIN.

constant demand in the New Orleans and other markets of the Gulf States. The cultivation of tobacco, sugar,

maize, and coffee is also increasing, and there is certainly a great future especially for the tobacco industry. Although the common cigars made of inferior kinds are dear at any price, the leaf grown in the Copan district is of prime quality, rivalling the very best Cuban varieties. Agricultural interests have long engaged the attention of the Government, which has still large tracts of the public domain at its command. These lands are granted on liberal terms to colonists of all nationalities, the chief condition required of the immigrants being that they shall settle down and cultivate their estates. But a great drawback is the want of good communications. The extensive forest tracts are almost impassable, and in 1900 there was only one short railway 60 miles long running from Puerto Cortes through San Pedro Sula to La Pimienta. But contracts have been made for the extension of the system by a transcontinental line from La Pimienta to the Pacific, and another from Puerto Cortes to Trujillo.

Inhabitants—Ladinos—Aborigines

Probably about three-fourths of the entire population may be classed as Ladinos, that is, Hispano-American half-castes who are of Spanish speech, and constitute the Honduras nationality. Their civilisation, like their Christianity, is little more than a veneer, and on the Atlantic coast-lands they are largely crossed with Negro blood. Here the *Sambos*, that is, African and Indian half-breeds, are the dominant element in some districts, especially about the lower Patuca and neighbouring marine lagoons. The dark strain comes from blacks either wrecked on the coast or else refugees from the West Indies in the seventeenth century. Towards the

close of the eighteenth century most of the Sambos were driven southwards to the Mosquito territory in Nicaragua by some 5000 Carib Indians, who in 1796 were removed by the English from St. Vincent to Roatan, largest of the Bay Islands. From this point they spread over the neighbouring islands, while large numbers settled as gardeners and fishers in the Trujillo district on the Honduras mainland. These Caribs, who are a prosperous, well-conducted people, now number about 20,000, and many have passed into the conterminous parts of British Honduras. Some of them still speak the old Carib language, which was at one time widely diffused over the Antilles, and many are also familiar with Spanish and English.

The prevalence of a broken form of English along the Atlantic sea-board is a curious phenomenon, which may be explained by the persistent efforts of British adventurers from Jamaica and other parts of the West Indies to establish themselves in this part of Honduras, the chief attraction being mahogany. In the eighteenth century they had even erected a fort on the Rio Poya (Negro or Tinto), near Trujillo, and although this had to be surrendered at the Treaty of Versailles, they returned at the next outbreak of hostilities, seized the Bay Islands, and tried to convert Ruotan to the "Gibraltar" of the American Mediterranean. Then came Sir Gregor Macgregor, who in 1819 became the cacique (head chief) of the Poyas Indians, and founded an ephemeral "kingdom" comprising a considerable section of Honduras and Nicaragua. After his death some English speculators purchased the estate (1839), claimed political rights over the province of "Victoria," so named in honour of the young Queen of England, erected *Fort William* facing the Bay Islands, and withdrew in 1850, when the

disputed territory was restored to Honduras on the intervention of the United States.

About one-fourth of the people of Honduras are full-blood Indians, and most of these still occupy their original lands in the western districts near the Guatemalan frontier. In pre-Columbian times these districts formed part of the Maya-Quiché domain, and the cultured Maya peoples are here still represented by the *Chorti*, who speak a language of Maya stock, and are closely related to the Pocomans of the conterminous Guatemalan provinces.

STONE AT COPAN.

Topography—Ruins of Copan

In the Chorti territory, about midway between the Atlantic and Pacific, is situated the ruined city of *Copan*, which was first explored by Stephens, and has since been more fully described by Mr. Maudslay. The remains, which are not nearly so well preserved as those of Uxmal and other dead cities of Yucatan, have been reduced by

time and weathering to little more than fragments of huge monuments, many of which are still covered with sculptured figures and undeciphered hieroglyphics of the same general Maya-Quiché type. Amongst the most interesting objects are the numerous monoliths scattered about, some still erect, others overturned, and almost buried in the ground or overgrown with weeds and underwood. On one of these blocks, 11 feet long and 3 wide, is represented the figure of a man with strange and complicated head-dress and breastplate, deeply incised and surrounded by florid scrollwork. On the reverse side are sixteen tablets, all carved with emblematic designs. Each monolith contains a representation of a similar human figure—probably an idol—but the emblems and hieroglyphs vary greatly. Remains of walls have been traced forming quadrangles in which the monoliths and portions of sculptured idols are found, while the parting walls slope up in terrace-like steps to a height of over 100 feet. In underground chambers were discovered large numbers of red earthenware jars which contained human bones buried in lime. Amongst the remains were also found sacrificial altars, enormous stone skulls, and sculptured death's heads, which, taken in connection with the other objects, suggest the conclusion that this place was a great centre of priestly power, used chiefly for sacrificial rites and other religious ceremonies. The ancient city of Copan stood probably at some distance from this sacred enclosure, on the site of the present village of the same name, which stands on a small plateau overlooking the Rio Copan about a mile from the centre of the ruins. The whole group of crumbling monuments extends some miles along the river bank, and an eminence on the opposite side is also crowned with extensive remains. Some of the temples

and palaces appear, like those of Tiahuanaco in Bolivia, never to have been completed, and in the neighbouring quarries huge blocks are found lying about, which were intended for these, if not for fresh structures.

North of Copan the chief place is *Santa Barbara*, capital of the fertile department of like name, which extends all the way to Honduras Bay. Here are the thriving seaports of *Omoa* and *Puerto Caballos*, the latter originally and even still known as *Puerto Cortes* from its founder, Fernando Cortes. The spacious harbour is certainly the best on the Atlantic side, being easily accessible to large vessels, and sheltered by a tongue of land from the nortes. It might also be greatly enlarged by deepening and widening the short channel through which it communicates with the neighbouring *Alvarado* lagoon. Puerto Caballos is the northern terminus of a railway which runs 60 miles inland to *La Pimienta*, and is ultimately to be continued to the Pacific at Fonseca Bay.

Farther east follows the port of *Trujillo* at Cape Honduras in the territory of the Poyas Indians. Trujillo was formerly a thriving place, but in recent years it has lost much of its importance, owing to the transfer of most of its trade to Omoa and Puerto Cortes. In the eastern region between Cape Cameron and Nicaragua, and stretching inland to the *Segovia Musco*, there are scarcely any towns except *Juticalpa*, and the neighbouring *Catacamas* in the upper Patuca basin. Formerly the whole of this sparsely inhabited region was comprised in the single department of Juticalpa, which has now been divided into the two administrative divisions of Olancho in the interior and Colon on the sea-board.

Comayagua, a former capital of Honduras, occupies a commanding position due east of Copan, over 2000 feet

above sea-level, near the water-parting between the Rios Humuya and Goascoran. It was formerly the largest and most flourishing city in the republic, with a population estimated at over 20,000. But it never recovered the disastrous siege of 1827, which ended in its capture and destruction by the Guatemalan forces.

Tegucigalpa, the present capital, was chosen as the seat of government in 1880. But even in the eighteenth century it was already a rival of Comayagua, being the chief mining centre of the highly mineralised district about the head-waters of the Rio Choluteca. After yielding a total output of about £40,000,000 between the years 1778 and 1820, the gold and silver mines of the department of Tegucigalpa were closed and almost forgotten, owing to the political troubles that followed the declaration of independence. But in recent years mining operations have been resumed at the stations of *Santa Lucia* and *San Juacinto*, a little to the east of the capital. Dr. Karl Sapper, who visited Honduras in 1898, describes San Juacinto as at present the most prosperous mining centre in the whole of the Isthmian region. Tegucigalpa, which is by far the largest city in the republic, with a population (1898) of about 15,000, is connected with its suburb of *Conception* by a stone bridge of ten arches, which here spans the upper Rio Choluteca. This river flows through the department of like name southwards to Fonseca Bay, where *Amapata* on Tiger Island is the only seaport of Honduras on the Pacific side.

History—Government—Finance

During the period of independence Honduras has been the theatre of constant revolutions and foreign wars, from which she has suffered almost more than any of

her sister republics. She was the first of the allied States to withdraw from the Central American Confederation. But although Honduras was constituted a separate republic so early as 11th January 1839, its present Charter dates only from October 1894. During the last three decades scarcely a year has passed without some military revolt, in one of which the capital was seized and held for some time by General Sanchez (1890). In the same period wars have been carried on with Salvador (1871-72) and with Nicaragua (1893-94), and in 1873 the seaport of Omoa was bombarded by an English man-of-war, to obtain redress for injuries inflicted on British subjects. The alliance formed with Salvador and Nicaragua in 1896 for foreign relations has proved inoperative, while political disturbances continue to be of constant occurrence. No doubt most of these disorders are purely local, but they tend to drive away foreign capital, and they retard the natural development of the land.

Under the present Constitution the legislative functions are entrusted to a Congress of Deputies elected by universal suffrage in the proportion of 1 per 10,000 inhabitants. A President, nominated and elected by popular vote for four years, is charged with the executive authority, and is assisted by a Council of Ministers for the Interior, Public Works, War, Finance, Public Instruction, and Justice.

Roman Catholicism is the dominant religion, but receives no support from the State, which guarantees absolute freedom to all creeds alike.

Education is also free, compulsory, and entirely secular. In 1899 there were 685 schools, 11 colleges, and a university, with a collective attendance of 24,000 pupils.

Despite the immense natural resources of the country,

its finances have long been in a deplorable state. In 1897 the budget showed a deficit of £53,000 (revenue £400,000, expenditure £453,000). In 1899 the external debt with arrears of interest, unpaid since 1872, amounted to the enormous sum of £17,372,000, and the internal to £1,200,000; total liabilities £18,572,000, or about £46 per head of the population, that is, £14 more than France, despite her heavy indebtedness. But it is right to state that a very large portion of the public debt consists of a loan negotiated by unscrupulous foreign capitalists for the avowed purpose of constructing the "Honduras Inter-Oceanic Railway," from Puerto Cortes to Fonseca Bay, about 150 miles in length, but of which only a first section 60 miles long has been finished in 1900. "This loan, amounting in 1876 to $27,000,000, was as complete a swindle as has ever disgraced American finances; but the people of Honduras, although responsible for the debt, had little to do with its origin, and cannot rightly be blamed for not paying interest on what they never had any advantage from" (Brigham, *op. cit.* p. 18).

II. British Honduras

Boundaries—Extent—Population

Despite its official designation, the Crown colony of "British Honduras" is nowhere conterminous with the republic of Honduras, from which it is completely separated by the Guatemalan province of Yzabal. Here the dividing line is the river Sarstoon, which flows east to Amatique Bay at the head of Honduras Bay. Towards Mexico the frontiers, as determined by the treaties of 1893 and 1897, have already been described. Within

the assigned limits there is a total area of 7562 miles, with a population, according to the census of 1891, of 31,471, and estimated for 1899 at about 35,000, all coloured except about 500 whites.

The Cockscomb Mountains

The southern part of the colony south of the capital, Belize, is largely occupied by the rugged Cockscomb range, which is disposed in the direction from north-east to south-west, and merges through a lateral ridge in the Guatemalan system. The prevailing formations are granites, hard limestones, and schists, which, owing to their vertical disposition, are very difficult to scale. Hence the culminating point, *Mount Victoria*, although only 3700 feet high, was ascended for the first time so recently as the year 1888 by some members of the Goldsworthy Expedition, who performed the feat by means of ropes made fast to stunted tree-stems. "The top of Mount Victoria," writes Mr. J. Bellamy, geologist of the expedition, "is a thorough peak, with but little room for moving about, and an extensive view is obtained on all sides. For some distance the prospect is nothing but alternate ridge and valley, densely wooded. There were no higher points north of us, but to the south Montagua and Omoa, in Spanish Honduras, were seen towering above the rest. No open country was seen nor any of the traditional lakes."[1]

Agricultural Resources

Here have been discovered iron and lead ores, with some indications of gold and silver. But when the

[1] *Proc. R. Geogr. Soc.* September 1889.

interior is opened up by the now projected railways these uplands will probably be found chiefly valuable for their fertile valleys and pastures, and for their invigorating climate. Compared with the insalubrious lowland districts, which are quite unsuited for European settlement, the slopes of the Cockscomb range may be described almost as health resorts for the few English colonists on the strip of low-lying coast-lands. "One of the most remarkable peculiarities of the climate and soil is that almost all the tropical products of commercial value may be grown in the same zone. I have frequently seen maize, rice, bananas, pine-apples, oranges, coffee, cacao, cotton, cassava, rubber, and coco-nuts all flourishing on the same piece of land. Cacao of good quality is found growing wild in the forests; there is an abundance of fibre-producing plants, particularly henequen and silk-grass, varieties of the aloe, and there is a large extent of land suitable for cattle and mule breeding" (Bellamy, *loc. cit.*)

Trade—Railway Projects

But hitherto the chief resources have been mahogany and logwood, by which the first English settlers, mainly buccaneers, were attracted to this district. These still form the chief items in the exports, which, owing to the lack of good communications, are declining, having fallen from £420,000 in 1893 to £280,000 in 1897. During the same period the imports also slightly declined from £290,000 to £280,000, while in 1897 the expenditure (£64,000) exceeded the revenue (£62,000) by £2000. These figures alone will suffice to show the neglected state of the colony, which nevertheless possesses very considerable agricultural resources only awaiting the construction of good roads and railways for

their development. In his report on the projected British Honduras Railway (August 1899) Mr. F. J. Newton, Colonial Secretary at Belize, tells us that the undertaking is still in suspense, although no financial difficulties stand in the way of its execution. Increased facilities of transport are indispensable for the prosperity of the colony, and it is therefore satisfactory to know that the Crown agents are now (1900) drafting a scheme for the construction of a line from Belize to the rich lacustrine district of Peten, in the neighbouring territory of Guatemala.

Belize

Belize, the capital and chief centre of population, lies at the mouth of the river of like name, which, after a winding course through a wooded valley between long pine-clad ridges, enters the Caribbean Sea over against the Island of *Turneffe*. Here the coast is fringed throughout its entire length from Honduras Bay to Yucatan by a continuous line of cays and coral reefs, forming a natural breakwater for an inner channel navigable by native craft. The Belize washes down much sedimentary matter, which has formed a long alluvial peninsula advancing beyond the normal shore line. But easy access is afforded to the harbour by a broad passage, which here pierces the fringing coral reefs, and is navigable by sea-going vessels. The town lies close to the waterside, where most of its wooden houses have been built on piles rising only two or three feet above high-water level.

History—Administration

Belize, a term often extended to the whole settlement, is the English form of the Spanish *Baliza*, which is itself

a corruption of *Wallace*, that is, the British freebooter who first gained a footing on this part of the Spanish main early in the eighteenth century. Although driven out more than once, the settlers always returned, and at last secured certain territorial rights by the Treaty of Paris (1763), which granted them what would now be called a "concession" to work the surrounding logwood and mahogany forests, and trade in the natural produce of the district under the sovereignty of Spain. The concession, which had been enlarged by the Treaty of Paris (1783), became British territory by right of conquest in 1798, when Belize was permanently occupied by a British force, and later constituted a Crown colony. It is administered by a Governor, assisted by an executive Council of four official and three unofficial members, and a legislative Council of three official and five unofficial members.

The Mahogany Industry

For over three hundred years Belize has been a chief centre of the mahogany trade, and although the forests in the vicinity of the original settlement are nearly exhausted, extensive tracts in the interior still abound in this valuable timber. It is described as one of the most majestic and beautiful of trees, rearing its huge crown of glossy green leaves far above all the other growths of the forest. Its trunk is often 50 feet in height, and 12 in diameter, and ramifies higher up into wide-branching arms overshadowing a vast extent of surface.

The season for cutting the mahogany usually begins about the month of August. Gangs of from twenty to fifty labourers are employed under the direction of a "captain," each gang having also a "huntsman," whose duty it is to search the trackless forests for suitable trees

to be felled, and to act as guides to the cutters. The felled trees of the season are scattered over so wide a space, that in order to reach them miles of tracks have to be made, and numerous rude bridges constructed over the rivers that lie in the way. All the larger logs have to be "squared" on wheeled trucks before being carted away to the large river banks, where the logs, all marked with the owners' initials, are floated down to the coast in

MAHOGANY.

the rainy season (May and June) when the current is deep and rapid. At the port of embarkation they are arrested by a boom placed athwart the stream, and here each gang separates its own logs from the rest, forms them into rafts, and tows them to the wharves, where they undergo a final process of smoothing with the axe before being shipped for exportation. In Europe the chief centre of the trade is Liverpool, where the consignments are usually sold by auction, the brokers receiving a small percentage on the sales.

CHAPTER XII

NICARAGUA

Extent—Area—Population—Geological Zones—The Mosquito Coast—The Central Zone—Cordillera de los Andes—Amerrique and "America"—Mineral Resources—The Volcanic Zone—Table of Nicaraguan Volcanoes—The Coseguina and Masaya Volcanoes—The Marabios—Lakes Managua and Nicaragua—Rivers and Coast Lagoons—Climate—Flora—Agricultural Resources—Fauna—Inhabitants—The Nicaraguans—The Aborigines—The Mosquito Indians—History of Mosquitia—The Clayton-Bulwer Treaty and the Nicaragua Ship-Canal—Topography—History—Government—Finance.

Extent—Area—Population

Of the Isthmian States Nicaragua ranks next in size to Guatemala, being nearly as large as England without Wales, but has little more than half the population of Salvador. It presents the outlines of a somewhat irregular equilateral triangle wedged in between Honduras on the north and Costa Rica on the south. The base of the triangle rests on the Caribbean Sea, where it extends for about 280 miles, from Cape Gracias à Dios southwards to the mouth of the Rio San Juan, while the apex is clearly indicated by the Coseguina volcano at the south side of Fonseca Bay. Towards Honduras the frontier, as determined by the Convention of 1870, runs from this inlet along the crest of the Cordillera de Dipilto north-westwards to 85° W. long., and thence a little north of

and nearly parallel with the Rio Coco (Wanks) to a point on the east coast just above Cape Gracias à Dios.

The boundary towards Costa Rica is still a subject of dispute, for the settlement of which a commission was appointed in July 1896, any points of disagreement being reserved for future arbitration. But pending a final decision, the line may here be taken as practically coinciding with the course of the Rio San Juan and the south side of Lake Nicaragua to within about 15 miles of the Pacific, and thence by a conventional line drawn across the isthmus to the coast at Salinas Bay. Within these limits, which include the now incorporated Mosquito Reserve, there is a total area of a little over 49,000 square miles, with a population of 420,000 distributed among the ten administrative departments as under :—

Departments.	Area in sq. miles.	Pop. (1895).	Chief Towns.	Pop. (est.)
Rivas . . .	1,300	50,000	Rivas	12,000
Granada } Managua } . .	2,600	100,000	Granada	15,000
			Managua	18,000
Leon . . .	3,200	70,000	Leon	34,000
Chinandega . .	2,100	40,000	Chinandega	8,000
Nueva Segovia .	13,600	35,000	Ocotal	12,000
Matagalpa . .	8,400	40,000	Matagalpa	9,000
Chontales . .	7,800	40,000	Acoyapa	2,500
S. Juan del Norte .	2,000	25,000	S. Juan	1,500
Mosquitia (Zelaya)	8,200	20,000	Bluefields	3,000
Total	49,200	420,000		

Physical Features—Geological Zones

In Nicaragua geographers distinguish three physical zones, which, going westwards, are—(1) The Mosquito sea-board, partly of coralline (marine), partly of alluvial formation; (2) The uplands of the interior with the

Cordillera de los Andes, forming part of the original continental framework, and extending from Mosquitia to the great depression which is now flooded by Lakes Nicaragua and Managua; (3) The coast-lands between the lakes and the Pacific, which are mainly of igneous origin, and form a southern continuation of the Salvador volcanic system.

The Mosquito Coast

These zones, however, are not quite so symmetrically disposed as might be inferred from the above general statement. Thus the Mosquito tract is completely interrupted southwards by the *Cordillera Yolaina*, a section of the main range which bends round to the east and reaches the coast at *Monkey Point* between Bluefields and the San Juan delta. But from Monkey Point to Cape Gracias à Dios the Mosquito Coralline and alluvial shore line is developed without any break, and with such remarkable regularity that it may be taken as a typical example of coast formation in warm tropical waters inhabited by the coral-building polyps. Parallel with the shore, at distances of from 3 to 6 or 8 miles, extends a nearly continuous fringe of coral reefs and islands, the latter seldom more than a few hundred feet long, and covered with coco-nut palm groves. The reefs are continually growing and closing up the gaps by which they are still separated, while new islands are formed by the accumulations of detritus on the submerged beds, so that in time a new shore line will be developed enclosing lagoons between it and the present beach. Thus is being repeated the process by which was formed the existing coast-line, beyond which, farther inland, are seen older lagoons and marshy tracts which were once the open sea.

The Mosquito coast is thus seen to result from a series of seaward growths due to the secretion of the polyps, combined with slow upheaval and the deposits of sediment washed down by the inland streams. The whole sea-board is fringed by impenetrable mangrove swamps, while farther inland the old lagoons and marshes have been transformed to broad grassy savannas, affording excellent pasturage for numerous herds of horned cattle. Still farther inland follow extensive forests of pitch pine, which also extend in some districts for many miles between the swampy river banks and the interior savannas. As the land rises westwards the pine groves are everywhere succeeded by the typical tropical woodlands, which range up to and over the crests of the intervening ridges into the central regions of Nicaragua.

The Central Zone—Cordillera de los Andes

Here the Mosquito zone is completely lost in the older formations, whose tectonic character is clearly indicated by the prevailing rocks—andesites, trachytes, greenstone, and metalliferous porphyries, succeeded by crystallised schists, dolerites, and metamorphic beds, which appear to be continued eastwards beneath the marine and alluvial deposits of the sea-board. The whole region is traversed by an irregular mountain system, to which has been given the collective and somewhat misleading name of the *Cordillera de los Andes*, a mere reminiscence of the time when Humboldt's great generalisation was still accepted as a well-established induction. The *Chontales*, *Matagalpa*, and *Segovia* highlands, locally called "cordilleras" and "montañas," have no physical connection with the Andean system of South America, from which they were formerly separated by broad

marine channels. With a maximum height of about 7000 feet, they descend in long terraced inclines towards the Atlantic, and present more precipitous escarpments towards the great lacustrine depression. But even here the main range, which may be regarded as a south-eastern extension of the Chile mountains in Honduras, has a mean altitude of considerably less than 1000 feet.

Amerrique and "America"

The Libertad district, about midway between Honduras and Costa Rica, is crossed by the low *Amerrique* (*Amerrisque*) ridge, which has become famous in connection with the much-discussed question of the origin of the word "America," already applied at an early date to the whole continent. The contention is that Amerigo Vespucci, hearing of this sierra as a district abounding in mineral treasures, took advantage of its accidental resemblance to his own name, and to perpetuate his glory applied it to the New World. If so, it was a lucky hit, its success being perhaps partly ensured by the form *America*, adopted from the first, and suggesting a rhythmical correspondence with *Africa*.

Mineral Resources

In this wooded central zone occur all the mineral deposits, mainly gold and silver, which are more widely diffused than is commonly supposed. The district about the head-waters of the Rio Principulca is known to be highly mineralised, and auriferous sands are washed down by all the other rivers, the Bluefields especially being noted for its profitable washings. Although few quartz

reefs have hitherto been tapped, the placer diggings have here and there proved highly remunerative, and large numbers of miners are now engaged on these workings. In 1898 operations were being carried on by American companies at over a hundred mines, in most of which gold is found in association with silver, and in a few silver with copper. In the same year the export of gold in the form of bar and dust amounted to 36,000 ounces, valued at £110,000, while that of silver in the form of dollars exceeded £50,000.

The Volcanic Zone

The third zone between the lakes and the Pacific is a typical plutonic region, forming an integral part of the Central American igneous system, and separated only by political frontiers from the Salvador and Costa Rica sections. Here are as many as seventeen cones, ranging in height from 3000 to 7000 feet, and presenting a continuous chain in every stage of quiescence and activity between those of the conterminous republics, as seen in the subjoined table, where they are disposed in the direction from north to south. It should be noticed that towards the south the chain passes right through Lake Nicaragua itself, where rise *Masaya* and *Mombacho* on or close to the shore, *Zapatera* in the water just south of Mombacho, and the twin-peaked *Ometepec* (*Alta Gracia* and *Madera*) on the largest island in the basin. The flooded depression is thus seen to belong to the volcanic zone, and the two lakes are in fact as intimately associated with igneous phenomena as are Atitlan and Ilopango in Guatemala and Salvador.

Table of Nicaraguan Volcanoes

Volcanoes.	Present State.	Last Eruption.	Height in Feet.
Coseguina . . .	Quiescent	1835	3600
Chonco . . .	Quiescent		
El Viejo . . .	Quiescent	...	5562
Santa Clara . .	Quiescent	...	4700
Telica . . .	Active	1850	3800
Orota	Quiescent		
Las Pilas . . .	Quiescent	...	4000
Axusco (Asososco) .	Extinct	...	4690
Monotombo . .	Active	1852	7000
Monotombito . .	Extinct		
Guanapepe . . .	Extinct		
Nindiri . . .	Quiescent		
Masaya . . .	Active	1858	3000
Mombacho . . .	Extinct	...	5250
Zapatera (Zapeton) .	Extinct		
Ometepec—			
Alta Gracia . .	Active	1883	5050
Madera . . .	Quiescent	...	5000

The Coseguina and Masaya Volcanoes

In recent times both *Coseguina* and *Masaya* have been the scenes of some of the most tremendous disturbances on record. Coseguina began to assume a threatening attitude on 20th January 1835, when an inky cloud of heated vapour hovering over the crater was lit up by lightning flashes, caused perhaps by the sudden ejection of hot gases and scoriæ into the cool atmosphere. As the cloud spread the sun was eclipsed, and everything looked sickly in the murky yellow light. For three days the explosions grew louder and more frequent, while the rain of sands continued until a deposit several feet thick was formed for many leagues round the crater. At Leon, over a hundred miles away, it was several inches deep, and it fell in Vera Cruz, Jamaica, Colombia, and

over an area nearly 2000 miles in diameter. At Belize the thundering was so loud that the forts were manned, in the belief that a naval action was being fought in the roadstead. For 800 miles these noises were heard, and everybody thought the day of judgment was at hand, when the earthquakes and explosions ceased at the end of forty-three days. On Coseguina a crater was opened a mile in diameter, and vast streams of lava flowed down into Fonseca Bay and the Pacific, which was covered with pumice for 150 miles seawards.

The Marabios

In the Masaya district the surface consists entirely of volcanic tuffs, through which all moisture percolates, so that the people have to draw their water-supply from a lakelet 330 feet below the town. This little basin appears to be itself a flooded crater, steep rocky walls enclosing it on all sides, with blackish cliffs at their base, here and there overgrown with maidenhair ferns. All the surroundings of the "Hell of Masaya," as the lake is called, are of igneous origin, and with the central volcano are connected the *Marabios*, a group of hills where are concentrated almost more volcanic vents than in any other spot on the globe. The best view of the Marabios is presented from the wide plain of Leon, from which as many as fourteen cones may be counted within a distance of about 70 miles. Here are lava fields, locally called the *Malpais*, or barren lands, extending in places for miles in all directions. During the day the observer is sensible of a glistening vibration of the atmosphere on the heated surface of these fields, while at night the whole district is lit up with bluish, alcoholic-like flames, flashing across the land, or leaping up like columns of

fire and then mysteriously disappearing. The natives call these strange coruscations *el baile de los demonios*, the devils' dance.

Lakes Managua and Nicaragua

In the narrow volcanic zone there is no room for the development of large rivers, so that nothing except a few insignificant coast streams reach the Pacific. Hence the whole of the drainage is practically to the Atlantic, to which even the lacustrine depression sends its overflow through the *Rio San Juan*. This remarkable depression, which stretches for about 300 miles in the direction from north-west to south-east parallel with the Pacific Coast, stands at a mean elevation of little more than 140 feet above the sea. At present it is divided by a narrow ridge 16 miles wide into two basins—*Managua*, nearly 50 miles long by 25 broad, with an average depth of 30 feet, and *Cocibolco*, commonly called *Lake Nicaragua*, which is the largest sheet of fresh water in the New World between Michigan and the Bolivian Titicaca, being fully 90 miles long, with a mean breadth of 40 miles, and a depth in some places of 260 feet, but shoaling to less than 10 feet towards the head of the San Juan desaguadero (emissary) at the south-east corner. Managua stands some 30 feet above the level of Nicaragua, with which it communicates intermittently across the intervening ridge through the Tipitapa emissary. During the rainy season this outlet, which is 16 miles long, with a fall of 7 or 8 inches per mile, has a depth of from 6 to 12 feet, but at other times is often quite dry. Since the Conquest its level appears to have undergone little change, although some of its former feeders have probably been displaced by the violent

earthquakes of which the Managua district is the chief centre. Hence the present slight inflow is mainly carried off by evaporation, except during the floods, when the Estero discharges its overflow to Cocibolco. On the other hand the larger basin receives considerable contributions both through the *Rio Frio* from Costa Rica, which reaches the lake just above its outlet, and through several perennial streams from the steep western slopes of the Cordillera de los Andes.

Lake Nicaragua, which has a total area of about 3700 square miles, is studded by several islands, some of volcanic origin (see above), some formed at its south-eastern extremity by the sedimentary matter washed down from the Costa Rica uplands by the Rio Frio. Several of the igneous islets are covered with thick layers of old eruptive deposits, in which are embedded freshwater shells of the same species as those still found on the neighbouring shores. It is thus evident that the lake stood formerly at a higher level than at present, and then it formed a continuous sheet of water with Managua. At that time the outlet was not to the Atlantic, but to the Pacific at Fonseca Bay, through a channel now represented by the *Estero Real*. This channel, which appears to have been blocked by a lava stream from the Monotombo volcano, gave access to several marine forms which still inhabit Lake Nicaragua, having gradually adapted themselves to their new environment like the seals and porpoises in the now freshwater Baikal and Camboja basins. The view presented by the great lake from its southern shores may be described as imposing rather than beautiful. Towards the north-west its waters extend beyond the horizon, while a little to the left is seen the large twin-peaked island of Ometepec, towering 5000 feet above

the surface. Still farther to the left, in the hazy distance, are visible the cloud-capped hills of Costa Rica, and, somewhat nearer, dark and densely wooded ranges on the right. Some animation is added to the scene by the flocks of wild duck and snow-white herons which hover round the low insular groups in the near distance.

Rivers and Coast Lagoons

At the south-east corner the crumbling ruins of the old Spanish fort of San Carlos indicate the point where the lake sends a constant and copious discharge to the Atlantic through the *Rio San Juan*. Except at the *Machuca* and neighbouring rapids, this emissary flows with a deep, tranquil current through a broad winding bed for a distance of nearly 130 miles to the coast at Greytown (S. Juan del Norte). The rapids, five in number, present insuperable obstacles to steam navigation, and are natural, not artificial, obstructions, as has been asserted, as if they had been formed by the Spaniards themselves to prevent the English rovers and buccaneers from penetrating to Lake Nicaragua. They are referred to by Herrera as the "great rocks and falls" which prevented Cordova, the first navigator of the lake, from descending the San Juan in 1522, and are in fact all that now remains of the main Cordillera, which has at this point been pierced by the desaguadero on its seaward course. The main stream enters the sea through a ramifying delta, one branch of which forms the harbour at Greytown, which, however, is rapidly silting up, and so shallow that ocean-going vessels have to ride at anchor in an open and dangerous roadstead.

North of the San Juan follow a considerable number of streams, all of which descend from the slopes of the

central Cordillera, and flow in nearly parallel easterly valleys to the Carribean Sea. But before reaching the ocean each of the five main arteries either empties into a coast lagoon, or else communicates through navigable channels with these basins, which form spacious land-locked harbours. All, however, are obstructed by shallow sand bars, where, with the exception of the *Bluefields* bank, the water never exceeds 7 feet even at high tide. Bluefields is undoubtedly the finest harbour in Mosquitia, if not on the whole eastern coast of Central America. Here the lagoon is over 15 miles long and 7 wide, with a depth of 16 feet, which might easily be increased by dredging. On the east side is an elevated bluff or headland, "with 30 feet of water close up to the shore, admirable for wharfage facilities."[1] The Bluefields river, in every respect the most important in Mosquitia, is navigable for 60 miles from its mouth, and is already utilised by American shippers engaged in the banana trade, of which the town of *Rama*, at the head of the navigation, is at present the chief centre.

Some 30 miles north of Bluefields lies the extensive *Pearl Lagoon* (*Laguna de las Perlas*), which also receives a large river of the same name descending from the interior. On its west side is the picturesque little town of *Pearl City*, which possesses some historic interest as a residence of the former "kings" of the Mosquito Indians. Then follow at intervals of 40 and 30 miles respectively the *Rio Grande*, which still sends down much mahogany and rubber, and the *Rio Principulca*, where the rubber industry has been supplanted by mining operations. Recently some rich auriferous beds have been discovered about its head-waters, where *Cuicuina* has become a busy gold-mining station.

[1] Courtney de Kalb, *Nicaragua*, New York, 1893, p. 17.

Beyond the large river *Wawa*, which in its lower course forms the northern boundary of the Mosquito coast proper, the great province of Segovia is traversed throughout its entire length by *Rio Segovia*, called also the *Rio Coco*, the *Rio Wanks*, and by other local names. It is the largest river in North Nicaragua, flowing in its upper course parallel with the frontier Cordillera de Dipilto, and lower down diverging slightly from the neighbouring Rio Patuca in Honduras, thus reaching the coast at Cape Gracias à Dios. The Segovia, which is navigable for small river craft from its delta to the rapids, a distance of over 170 miles, drains an area of about 12,000 square miles, and has a total length of 400 miles, with an average discharge of 17,000 cubic feet per second. But all the branches of its delta are shallow, while the neighbouring coast lagoon, which in the eighteenth century was a fine harbour, "is silting up so rapidly that it will soon be nothing but a swamp."[1] During the floods there is a rise of 15 feet above the normal level.

Climate

Thanks to a mean altitude of from 2000 to 3000 feet above the sea, the central uplands, including the Atlantic slopes of the Nicaraguan backbone, enjoy a relatively mild climate, generally healthy and suited for European settlement. But elsewhere the climate is distinctly tropical, with a rainy summer season from May to November, followed by a dry period for the rest of the year. The mean annual temperature is about 80° F., showing slight deviations from month to month, but with a range of as much as 20° (70° to 90°) between noon and midnight. The whole region comes within

[1] J. M. Nicoll, *Geogr. Jour.* June 1898, p. 660.

the track of the moist north-east monsoons, which set regularly from the Caribbean Sea, and are scarcely anywhere interrupted until they reach the Central Cordillera and the lofty cones of the igneous zone. Thus the heaviest precipitation occurs along the west side of the lacustrine depression, where the mean annual rainfall exceeds 100 inches in the Rivas district. Elsewhere it falls to about 90 in summer, and to 10 or under in winter.

The flat, low-lying Mosquito coast-lands, being subject to the inundations of the numerous streams from the interior, and to the exhalations of the stagnant waters of the coast lagoons, seem to combine all the conditions of a malarious climate, and Mosquitia is commonly described as a fever-stricken region. Nevertheless we are assured by Mr. de Kalb, a most careful observer, that the description is erroneous, and that this sea-board enjoys, on the contrary, a fairly salubrious climate. This naturalist fully admits the elementary conditions which ought to result in endemic agues and marsh fevers, but points out that their effects are counteracted by the beneficent sea breezes. "In spite of such extensive areas of swamp and marsh, the climate has been proved by experience to be free from that deadly character which is the bane of so large a part of the American isthmus. All the conditions productive of malaria are present, but the ceaseless trade winds from the Atlantic and the Caribbean sweep away the miasmatic exhalations and purify the air. It is a land blessed with abundant sunshine, but while overhead the sky is clear and blue, the vapours borne westward by the winds condense upon the mountains in towers of cloud, which seem to topple over as night draws on, and roll back upon the coast in furious showers. To whatever cause it may be due, the Mosquito

shore is not unhealthy, and no authentic case of yellow fever has ever been reported throughout its length, an immunity due, no doubt, in part to the rigid quarantine regulations which have been maintained for decades" (*op. cit.* p. 16).

Flora—Agricultural Resources—Fauna

Each of the three physical zones has its special vegetable products, which, however, here and there overlap and encroach upon their neighbours. Thus while

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the pitch pine and mahogany forests are mainly confined to the marshy Mosquito sea-board, the rubber-yielding plants of this region range also farther inland, especially on the Chontales slopes beyond the grassy savannas of the intermediate zone. For the rubber industry, which is already carried on chiefly by the aborigines in a reckless sort of way, there appears to be a great future. The "Nicaragua scrap," or "sheet," as it is called in the trade, is chiefly obtained from the *Castilloa elastica*, a large handsome tree of the bread-fruit family, quite different from the euphorbiaceous seringas which yield the rubber of the Amazonian lands. The native

gatherers tap the trees too frequently, and to save them from total destruction, the Government has prohibited all traffic in rubber for an indefinite period from the year 1898. In some years the quantity exported has amounted to 600,000 pounds, valued at £42,000.

Another widely diffused economic plant is the banana, the cultivation of which is also increasing. In 1891 no less than 1,155,000 bunches, valued at over £46,000, were exported from the Bluefields river alone. But most of the strictly colonial produce is raised in the fertile volcanic zone, which yields splendid crops of cotton, sugar, rice, tobacco, cocoa, maize, and especially coffee. Here also pine-apples, yams, arrowroot, guava, citrons, and many other tropical fruits thrive well, while the extensive forest tracts of the central provinces abound in cedars, rosewood, ironwood, vanilla, sarsaparilla, log-wood, and many other dyewoods, medicinal plants, and valuable timbers. Specially characteristic plants are the superb Coyol palm (*Cocos butyracea*, L.), with feathery leaves 15 to 20 feet long, yielding the intoxicating *vino de Coyol*, and the remarkable *Herrania purpurea*, a "chocolate-tree," whose seeds yield a more highly flavoured chocolate than the cocoa itself. Although perhaps on the whole inferior to that of corresponding latitudes in the eastern hemisphere, the tropical flora, especially of the Nindiri district and some other parts of the volcanic zone, can scarcely be surpassed for beauty, exuberance, and variety.

The wild fauna differs in few respects from that of the neighbouring lands. The wooded districts are still infested by the jaguar, puma, and ocelot; alligators swarm in the lakes and most of the rivers, and a species of fresh-water shark recalls the time when Lake Nicaragua still communicated with the Pacific. Vultures,

toucans, humming-birds are almost everywhere familiar sights, and amongst the endless species of reptiles are the python and black snake, the harmless boba or "chicken snake," the deadly corali, taboba, and rattle-snake. Lizards abound, some edible, some said to be poisonous; scorpions also are numerous, and the iguana family is represented by some very large species.

Of economic animals by far the most valuable are the horned cattle, which graze to the number of about half a million on the rich savannas of the Atlantic slopes.

RATTLESNAKE.

But here there is ample space and sustenance for many millions, and the exports of live stock and hides, collectively valued in 1898 at £17,000, might easily be increased a hundredfold. At present the largest item in the list of exports is coffee, valued in 1898 at £385,000.

Inhabitants—The Nicaraguans

Of the present inhabitants of Nicaragua 40,000 are officially classed as "Bravos," that is, semi-independent wild tribes, scattered in small groups over the little-

known wooded tracts in the central parts of the provinces of Chontales, Matagalpa, and Segovia. Between these extensive unsettled districts the Mosquito coast, with its eastern and western extensions to the Honduras and Costa Rica frontiers, is occupied by an extremely heterogeneous population of about 20,000, commonly called "Mosquito Indians," who stand at a considerably higher level of culture than the Bravos, but have been citizens of Nicaragua only since the year 1894, when the Mosquito Reserve was definitely incorporated with the territory of the republic.

All the rest of the people, about 360,000, all but a mere fraction Hispano-American Mestizos, constitute the Nicaraguan nationality in the strict sense of the term. A glance at the map will show that they are mainly confined to the lacustrine region and the volcanic zone between that depression and the Pacific. Like the other Hispano-American nationalities, they form more or less civilised settled communities of Spanish speech, religion, and general culture. It is noteworthy that the original Spanish element itself has been almost completely absorbed in the Ladino population, and in the whole of Nicaragua there are at present (1900) less than 1600 full-blood Europeans—1200 of Spanish descent and 380 recent immigrants, chiefly from Germany, Great Britain, and Italy, with a few Anglo-Americans.

The Aborigines

At the time of the Conquest, when the country was admittedly far more densely peopled than at present, there were, according to Herrera, altogether five distinct ethnical groups, or rather five groups speaking as many radically distinct languages—what are now called stock

languages. These were the CARIBISI of the Atlantic seaboard, still spoken by some of the Mosquito Indians and some other neighbouring tribes; the CHONTAL, also still spoken by the present Chontals, and by many other aborigines in Central Nicaragua and the contiguous parts of Honduras and Costa Rica, to whom is now commonly given the collective name of LENCAS (see table, p. 23); the CHOROTEGAN, now extinct, but formerly current amongst the *Dirians* ("Hillmen") between the lakes and the Pacific, and amongst the *Nagrandans* of the plain of Leon; the OROTIÑAN of the Gulf of Nicoya and thence to Lake Nicaragua, also extinct, but probably distantly related to Chorotegan; lastly, CHOLUTEC, a pure Aztec idiom still surviving amongst a few scattered groups of *Niquirans*, but in pre-Columbian times widely diffused over the northern parts of the volcanic zone as far as Fonseca Bay, also in the lacustrine islands, and even beyond the depression in the western parts of the present provinces of Segovia, Matagalpa, and Chontales.

The Caribs and Sambos

It should be noticed that the first and last—Caribisi and Niquirans—were intruders from prehistoric times, one on the Atlantic side from the West Indies, the other on the Pacific side from Mexico, while all the others constituted the true indigenous element in Nicaragua. Recent research has shown that in pre-Columbian times the Atlantic coast-lands had been invaded and repeopled by Carib tribes (Herrera's Caribisi) from the neighbouring West Indian islands. These original Caribs still survive under other names—Melchoras, Ramas, Wulwas, Waiknes, etc.—now grouped as LENCAS, but have mostly been driven inland in relatively quite recent times by other

invaders, some also from the Antilles, others from Africa. The Africans were castaways from a Dutch slaver wrecked about 1650 on the Costa Rica sea-board, and have always been known as "Sambos," possibly because they were shipped at the island of Samba on the coast of Senegambia. From Costa Rica they made their way north to Cape Gracias à Dios, and soon merged with the Caribs in a mixed seafaring population later known as Mosquito Indians. After the dissolution of the buccaneer "republic" in 1688, they were joined by several of the European freebooters, and the ethnical confusion was increased by the constant accessions of other whites and Negroes from Jamaica, and again by the Negroid Caribs of St. Vincent removed to the Bay Islands by the English in 1796. Such are the components of the extremely mixed Sambo-Carib section of the Mosquito Indians, nearly all of whom are familiar both with the original Carib tongue and with English, which is everywhere current along this coast. But many show little or no trace of a Negro strain, and these full-blood Indians now call themselves "*Tangweera*," that is, "straight-haired," in contradistinction to the curly-haired half-breeds. All are described by Mr. C. Napier Bell as a bold seafaring people, frank, friendly, quarrelsome, and although nominal Christians (converted by the Moravian missionaries), of extremely lax morals.[1]

The Mosquito Indians—History of Mosquitia

The prevalence of the English language on this sea-board is due to political associations, which go back to early colonial times, and present some features of more than local interest. Discovered by Columbus in 1502, the Mosquito Coast attracted no particular attention till

[1] *Tangweera, Life and Adventure among Gentle Savages*, 1899.

the rise of the buccaneers in the seventeenth century, when its spacious lagoons, approached by intricate channels through the fringing coral reefs, afforded safe retreats and convenient points from which to harry the Spanish main and surprise the Carthagena treasure-ships. The harbour at the mouth of the Wanks river was their chief rendezvous, and also the chief settlement of the Carib natives, who now began to be known as the "Mosquito Indians," possibly through some confusion between the *Moscos*, one of their chief tribes, and the *mosquitoes* which swarmed in all the lagoons.[1] They became great friends of the corsairs, who treated them with much kindness, taught them the use of firearms, and aided them in their incursions into the neighbouring Spanish settlements. Most of the freebooters being Englishmen, the English language and influences began to spread along the coast, and these influences were strengthened by the British occupation of Jamaica in 1655.

Later (1688) the Carib chief was taken to the island, and received from the Governor a document, which became historical, and was long preserved by the tribe. It conferred on him the title of "King of the Mosquitoes," and appointed him Governor-General under England, with instructions to aid and succour all Englishmen visiting his "dominions," which thus acquired the status of an informal British protectorate. More definite relations were established in 1740, when the king was induced to cede the territory to England, this step being followed by the appointment of a "Superintendent" and the establishment of British settlements protected by troops from Jamaica, despite Spanish protests. Although this position was abandoned at the Treaty of Paris (1763), and again by the Treaty of Versailles (1783), in which England

[1] In Spanish, *mosco* = fly; *mosquito* = little fly, midge, gnat.

agreed to withdraw from the Spanish continent, she persisted in holding Mosquitia, on the ground that it was no part of the "Spanish Continent," but belonged to the "American Continent." But this contention was given up in 1786, and occupation ceased till the revolt of the Spanish colonies in 1821, when it was renewed, the Mosquito chief being again crowned as "King" under the formal protection of Great Britain. It was from one of his successors that Sir Gregor Macgregor obtained a grant of land which he sold for £16,000 to some English traders, whose efforts at colonisation ended in failure, as did also Sir Gregor's "Indialand," an ideal republic, intended as a refuge for the oppressed of all races and creeds. Meantime the British claims, opposed by the Nicaraguans as heirs to Spanish rights, were vigorously pressed, and extended to Greytown, which was occupied in 1848 in the name of the Mosquito king. At the same time an attempt was made to seize Tiger Island in Fonseca Bay, the object being to hold both termini of the already projected Nicaraguan ship-canal. This brought the Americans into the field, and led up to the famous Clayton-Bulwer Treaty of 1850, in which England and the United States mutually agreed never to claim any exclusive control over the future canal, nor to occupy or exercise any dominion over any part of Central America. But the continued occupation of Greytown, in apparent contravention of this agreement, led to further troubles, which were settled in 1860 by the Treaty of Comayagua, in which England ceded to Honduras her portion of the Mosquito Coast unreservedly, and by that of Managua ceding the Nicaraguan portion, over which, however, the republic was to hold only a nominal sovereignty. This limitation was finally removed in 1896, when the Mosquito Indians voluntarily declared for incorporation with

Nicaragua, which is henceforth mistress of the whole seaboard between Honduras and Costa Rica.

The Clayton-Bulwer Treaty and the Nicaragua Ship-Canal

Now, however, the Clayton-Bulwer Treaty stood in the way of the Nicaraguan canal scheme, which has always been favoured by the United States in preference to that of Panama and all other routes, but could not be carried out so long as America was barred by the treaty from exercising complete control over the inter-oceanic waterway. The difficulty would have been removed by the Hay-Pauncefote Agreement, which was signed at Washington on 5th February 1900, and guaranteed the absolute neutrality of the canal for all nations. But in December 1900 the Senate introduced certain amendments which seriously affected this principle of neutrality, and gave the virtual control of the route to the United States in time of war. Hence the British Government was unable to accept the Agreement as thus modified, and the Clayton-Bulwer Treaty still bars the way. Lord Pauncefote and Mr. Hay are now endeavouring to arrange a new convention which may be found acceptable to both contracting parties.[1] A measure providing for the construction of a canal by the Maritime Canal Company in six years at an outlay of £23,000,000 had already been passed by the Senate in January 1900, but has not yet been approved by the House of Representatives.

This route, starting from Greytown, where it is proposed to create a harbour "if possible," runs towards Lake Nicaragua and the Divide through three locks, with a total rise of 106 feet, and a cutting through the Divide

[1] Letter of the Marquess of Lansdowne to Lord Pauncefote, 22nd February 1901, presented to both Houses of Parliament, March 1901.

3 miles long, which will require the removal of 12,000,000 cubic yards, more than half consisting of solid lavas and other rocks. Then follow a series of vast basins, for which a number of gigantic dams will have to be made, one over the San Juan Valley at Ochoa being no less than 1250 feet long and 70 high. Beyond these works the San Juan is utilised to the great lake, which, with some 1200 feet of dredging, will afford a waterway of 56 miles to the Rio Grande valley, which will be followed to the Pacific entrance at Brito. But here also there will be needed three locks with a total fall of 110 feet, and the formation of another reservoir by an embankment 1800 feet long and 70 feet high. Some authorities, however, believe that the Greytown harbour, the Ochoa dam, and the cutting through the Divide are impossible, and think a much more practicable route would be found in the Colorado (Costa Rican) branch of the San Juan delta. A serious difficulty may also be presented by Lake Nicaragua itself, the level of which it is feared is not constant. From a study of the measurements taken at different times by various hydrographers, Professor A. Helprin infers that the surface of the lake has probably fallen as much as from 15 to 20 feet during the last fifty years.[1]

By the Nicaraguan Canal the distance from New York to Melbourne and Yokohama will be reduced to 9287 and 8650 miles respectively, their distance from Liverpool being 11,350 and 11,765 miles. This scheme, it is therefore inferred, "will bring about the most serious rivalry to the commercial supremacy of Great Britain which she has had yet to encounter."[2]

Subjoined is a table of the distances in geographical

[1] *Nature*, 8th March, 1900, p. 451.

[2] A. R. Colquhoun, *The Key to the Pacific*, 1895.

miles from the Atlantic entrance of the canal to various seaports in the western and eastern hemispheres :—

Seaports.	Miles.	Seaports.	Miles.
New York	2020	Acapulco	932
New Orleans	1308	Mazatlan	1,492
Havana	900	San Francisco	2,578
Puerto Rico	1100	Seattle	3,500
Para	2600	Guayaquil	912
Bahia	4010	Callao	1,531
Rio di Janeiro	4750	Valparaiso	2,518
Buenos Ayres	6060	Sandwich Islands	4,198
Cadiz	4220	Yokohama	7,173
Lisbon	4200	Hongkong	8,848
Havre	4874	Manila	9,130
London	5025	Batavia	9,950
Liverpool	4769	Singapore	10,300
Glasgow	4895	Melbourne	7,810
Hamburg	5219	Wellington	6,490

Topography

As at present distributed the immense majority of the people are concentrated in the narrow igneous zone which lies west and north-west of the lacustrine depression, and has an area of less than 10,000 square miles. Here have always been centred the life and activities of the nation, and here are exclusively situated all the large centres of population. Here is *Managua*, the capital of the republic, which occupies a convenient position at the converging point of several trade routes on the south-west margin of the lake to which it gives its name. It is not a very large place, having scarcely more than half the population of *Leon*, which lies on the great plain of the same name, about midway between Managua and Fonseca Bay, on the old historic route to Honduras. Close by is the ancient Indian city of *Subtiaba*, whose inhabitants were said to number 100,000 in pre-Columbian times.

It was the capital of the powerful Nagrandan nation, a branch of the Chorotegans, who were dominant in the region between Lake Managua and Fonseca Bay.

Leon is connected by rail with the seaport of *Corinto*, which is the outlet for the coffee and other produce of the surrounding plantations. About two-thirds of the whole foreign trade of Nicaragua passes through Corinto, where in 1898 the entries (ocean steamers and coasting vessels) numbered 210 of 186,000 tons.

South of Managua the main highway passes through *Masaya*, and terminates at *Granada* on the north side of the great lake. Granada, which was founded in 1523 by Francisco de Cordoba, was sacked no less than three times by the buccaneers penetrating inland from the Atlantic side by the Rio San Juan (1665 and 1670) and from the Pacific Coast in 1685. It was also captured and burnt by Walker and his filibusters in 1856, but has since been rebuilt, and is at present the most prosperous place in the republic next to Leon. The streets, all disposed at right angles, are laid out in a peculiar manner, running for distances of fifty paces or so at a dead level, then suddenly rising by a steep incline to a second level, and so on. Amongst the local "specialities" is the preparation of the so-called Panama chains, which are made of solid or hollow gold wire and strung together like our hair chains. Some of the specimens are masterpieces of the goldsmith's art, unsurpassed in any of the European workshops.

On the route from Granada to Costa Rica the only important place is *Rivas*, which stands close to the lake over against the large island of Ometepec. Here was the residence of the Niquiran chief, from whom the whole region is supposed to have been called Nicaragua, and Rivas itself bore this name long after it was raised

to the rank of a municipality in 1720. Its outlet on the Pacific is the little port of *Brito*, the proposed terminus of the future inter-oceanic canal. But if this place is selected, its exposed little harbour, not more than 70 acres in extent, will have to be greatly enlarged and sheltered by costly breakwaters.

History—Government—Finance

Since the year 1823, when Nicaragua joined the Central American Confederation, the country has known little respite from internal and external troubles. Even before the dissolution of the Union in 1833, much blood was shed in abortive efforts at secession, in wars with Costa Rica about the disputed territory of Guanacaste between the great lake and the Gulf of Nicoya, and also by the rivalries of Leon and Granada, respective headquarters of the Liberal and Conservative factions. Then followed a long series of military and civil revolts, varied by the filibustering expedition of General Walker, undertaken on the invitation of the democrats of Leon to aid them in crushing the aristocrats of Granada. After seizing the supreme power in 1856, Walker was driven out by the combined forces of the neighbouring republics, and on venturing to return was captured and shot at Trujillo in 1860. Later an outbreak in Granada (1891) led to a general insurrection in 1892, causing much loss to foreign settlers, and the refusal of a demand for £15,500 as reparation for injuries to British subjects brought about the occupation of Corinto by the English in 1895, and their withdrawal next year on payment of the indemnity. In 1897 President Zelaya proclaimed himself dictator, and has since been engaged in quelling

revolts at Nargote, San Juan del Sur, Rivas (1898), and in other districts.

The present Constitution, which almost completely supersedes that of 1858, dates only from the year 1894. It vests the legislative power in a Congress of one House composed of 40 members, who are returned by universal suffrage for two years. The executive is entrusted to a President elected for four years, and assisted by a Council of responsible ministers for the four departments of Foreign Affairs and Public Instruction; Finance; Interior, Justice, War, and Marine; and Public Works.

Public instruction is undeveloped and at present (1900) limited to a nominal attendance of about 20,000 at 1030 schools. According to an official report 30 per cent of the children are enrolled in Granada and Leon, but it is added that only half of these learn anything, while of the whole population of school age not more than 3 per cent receive even a rudimentary education.

Despite the incessant political disorders, the finances of the republic are in a healthy state. In 1898 the revenue (£930,000) exceeded the expenditure (£770,000) by £160,000, while the foreign debt, chiefly railway loans, fell short of £290,000. There is, however, an internal debt of £1,500,000, making a total liability of £1,790,000, an insignificant amount compared with that of Honduras.

CHAPTER XIII

COSTA RICA

Physical Features—The Volcanic Section—Table of Costa Rican Volcanoes—The Continental Section—Gulfs and Rivers—Climate—Flora—Agricultural Resources—Mineral Wealth—Fauna—Inhabitants—The Costa Ricans—The Guatusos and Talamancans—Topography—History—Government—Finance.

Extent—Area—Population

COSTA RICA, which next to Salvador is the smallest of the Isthmian States, comprises that narrow section of Central America which extends from Nicaragua in a south-easterly direction to the Colombian department of Panama. As already stated, the northern frontiers coincide with the Rio San Juan and the southern shore of the great lake, while those towards Panama, as laid down by the award of the President of the French Republic in September 1900, are indicated by a line running from Cape Morea on the Atlantic along the spur of the Cordillera enclosing the Rio Tarire valley on the north, and the continental water-parting to 9° N. It then follows the water-parting between the Chiriqui Viejo and the affluents of the Golfo Dulce, terminating at Point Burica on the Pacific side. The islands near the coast east and south-east of Cape Morea are assigned to Colombia, those to the west and north-west to Costa Rica, while the more

distant groups between the Mosquito Coast and Panama —Mangle Grande, Mangle Chico, Albuquerque, San Andres, Santa Catalina, Providencia, and Esculo de Veragua—together with the Canton of San Andres, go to Colombia, which also gets the Burica islets and all east of Point Burica. Those west of the same point are assigned to Costa Rica, which by this award loses a considerable tract on her southern frontier. Between Salinas Bay and Burica Cape, northernmost and southernmost points on the Pacific side, there is an extreme length of about 300 miles, but not more than 150 between the San Juan delta and Cape Morea on the Caribbean Sea, with an area of over 22,000 square miles, and a population of 294,000 distributed over the 7 administrative divisions (5 provinces and 2 comarcas) as under:—

Provinces.	Pop. (est. 1897).	Chief Towns.	Pop.
San José . .	94,000	San José .	16,000
Alajuela . . .	81,000	Alajuela .	5,000
Cartago . . .	49,000	Cartago .	6,000
Heredia . . .	39,000	Heredia .	5,000
Guanacuaste . .	18,000	Liberia .	2,000
Comarcas.			
Puntarenas . .	10,000	Puntarenas	3,000
Limon . . .	3,000	Limon .	1,000
Total before the award of 1900 . .	294,000		

Physical Features—The Volcanic Section

In early secondary times Costa Rica formed two distinct physical regions, traces of which can still be detected in its present configuration. Between the low-wooded Atlantic sea-board, and the *llanuras* or savannas of the Pacific slope, a rugged tableland with a mean

elevation of from 3000 to 4000 feet occupies the whole of the interior, and is traversed throughout its entire extent by a lofty range running about midway between the two oceans. This range, which maintains an average altitude of over 6000 feet, is dominated at intervals by a long line of lofty cones and peaks rising from 7000 or 8000 to nearly 12,000 feet above the sea. But this apparently continuous formation is clearly divided into a northern and a southern section of about equal extent at the *Ochomogo Pass* near Cartago, which falls to less than 5000 feet, and forms a scarcely perceptible divide between the sources of the *Rio Grande de Tarcoles* flowing west to the Pacific and the *Reventazon* descending east to the Atlantic. These two fluvial valleys, like those of the Rios Humuya and Goascoran in Honduras, jointly represent a deep depression which was formerly flooded by a marine channel connecting the two oceans. The section extending from this depression north to Lake Nicaragua is mainly of igneous formation, and here all the peaks rising above the main range are volcanoes, either long extinct, or quiescent, or even still active as shown in the subjoined table, in which they follow in the direction from north-west to south-east:—

Table of Costa Rican Volcanoes

Volcanoes.	Present State.	Height in feet.
Orosi	Quiescent	5,195
Rincon de la Vieja	Quiescent	4,500
Miravalles	Extinct	4,665
Monte Muerto	Extinct	8,000
Tenorio	Extinct	6,800
Los Votos, or Poas	Extinct	8,675
Barba	Extinct	9,335
Irazu, or Cartago	Active	11,200
Turrialba	Extinct	11,000

In secondary times these cones do not appear to have been disposed in a continuous chain, as at present, but formed the summits of a number of islands constituting an igneous archipelago corresponding in its general trend with the Hawaii group. The archipelago was afterwards gradually filled up and soldered into a compact mass by the lavas, ashes, or other eruptive matter discharged by the burning mountains, and later extended in the direction of both oceans by the sedimentary deposits of the running waters. "It is clear," writes Colonel G. E. Church, "that the Caribbean Sea once connected with the Pacific Ocean through the valley of the river Revantazon, up which the Costa Rica Railway now climbs to reach Cartago and San José. At its Las Lomas station, about 700 feet altitude, are found fossil sharks' teeth, compact masses of sea-shells, fossil fish, and petrified wood full of borings of the *Teredo navalis*. At an elevation of 2500 feet large deposits of compact shell limestone, out of which lime is made, are also found."[1]

The Continental Section

South of the Ochomogo depression the volcanic system disappears, and here the main range known in its various sections as the *Montaña Dota*, the *Cordillera de Talamanca*, and farther south as the *Cordillera de Chiriqui*, forms part of the continental framework and later sedimentary formations. With the doubtful exception of *Herradura* (*Turubales*) at the entrance of the Gulf of Nicoya, and *Chiripo* (11,480 feet) south of Turrialba, there are no volcanoes in the southern section of Costa Rica, although the igneous system reappears in the Isthmus of Panama beyond the frontier. In the Dota and

[1] "Costa Rica," *Geograph. Jour.* July 1897, p. 60.

Talamanca ranges the highest crests, such as Buena Vista (10,820 feet), *Rovalo* (7050), *Pico Blanco* (9560), and *Ujum* (9700), show no trace of terminal craters. The whole region is also mainly free from earthquakes, which, though seldom very violent, are frequent enough in the northern section.

Formerly a Pacific Coast range, running parallel with the continental systems, developed a continuous curve from the Gulf of Nicoya round to Panama Bay. The fragmentary sections of this outer chain, which, however, nowhere attains an altitude of more than 3000 feet, may still be followed in the ridges traversing the *Nicoya*, *Dulce*, *Burica*, and *Azuero* peninsulas. To the same system, which has a total length of 560 miles, belong the large island of *Coiba* south of Burica Point, and the *Pearl Archipelago* in Panama Bay.

Gulfs and Rivers

The two large inlets formed by the Nicoya and Dulce peninsulas differ considerably in their main features. Nicoya, a shallow basin studded with wooded islands, and presenting contour lines resembling those of the Bay of Naples, is being gradually filled up by the sedimentary matter deposited by the mountain torrents from the surrounding uplands. On the other hand the *Golfo Dulce*, "Fresh-water Gulf," is a deep inlet (mean 600 feet), which is destitute of islands, and receives but trifling contributions from the neighbouring uplands.

Except the already mentioned Rios Tarcoles and Reventazon, no important streams flow from the Costa Rican heights either to the Pacific or the Atlantic. But on the north side Lake Nicaragua receives the relatively copious *Rio Frio*, which discharges large quantities of

sediment, and is thus forming shallow banks and islands about the head of the San Juan emissary. Lower down the San Juan itself receives much alluvial matter through the *Rios San Carlos* and *Sarapiqui* from the Costa Rican highlands. The sands and mud thus washed down have already filled up Greytown harbour, and will be a source of constant trouble and expense to the promoters of the Nicaraguan ship-canal. The difficulty might perhaps be avoided by selecting for the Atlantic terminus the *Colorado* branch, through which the San Juan now discharges most of its liquid contents. But the Colorado flows entirely through Costa Rican territory, and this route is consequently for the present excluded on political grounds. The objection may, however, be eventually got over by a mutual arrangement between the United States, Nicaraguan, and Costa Rican Governments.

Climate—Flora—Agricultural Resources

Owing to its position between the two oceans Costa Rica enjoys an essentially marine climate, which, however, is modified in various ways by its general elevation and other local conditions. Thus the mean annual temperature falls from about 80° F. on both of the low-lying sea-boards, to 70° or less at San José, and in most of the other inhabited upland districts. Dry winds prevail on the Pacific, moist on the Atlantic slopes, with the result that although the temperature is higher on the west side, it is more oppressive on the Caribbean coast-lands. But on the whole "Costa Rica is the healthiest tropical country in the New World" (Church).

A yearly rainfall exceeding 100, and even 130 inches on the eastern slopes, supports a wonderfully

rich forest vegetation comprising many valuable species, such as mahogany, brazil wood, cedar, evergreen oak, and ebony. Grassy savannas, which might afford sustenance for millions of horned cattle prevail on the Pacific and northern llanuras, while the rich volcanic soil of the San José and Cartago uplands is admirably suited for the cultivation of tropical fruits and economic plants.

At present attention is paid chiefly to coffee and banana culture, which since the general suspension of mining operations constitute the staple industries of the country. In 1897 coffee was exported to the value of £863,000, of which £330,000 were taken by England, where this variety has become popular. In the same year the export of bananas exceeded £150,000, while all the other items of the export trade—skins, hides, cedar, and various woods—were valued at less than £290,000.

Mineral Wealth

From these items the precious metals have disappeared, although mining operations were, till recently, carried on at several places, and there can be no doubt that many districts are highly mineralised. At *Monte Agnacate*, in the province of Alajuela, are some auriferous quartz veins of great richness. Most of the ores are of high grade, and in a few years the Los Castros mine yielded £400,000, although the operations were carried on in such a primitive manner that only a small percentage of the metal was saved. The whole of the south-western slope of the Guatusos and Miravalles ranges appears to be also auriferous, and here the surveys report numerous rich veins miles in length, and from 2 to 40 feet in width. In the Abengares district several gold-bearing reefs have been discovered, and at the neighbouring *Tres Hermanos*

mine a rich vein 17 feet thick has been followed for a distance of 3 miles. Some of the reports read like those of the Witwatersrand in the Transvaal, and it is inferred that when thoroughly explored Costa Rica will prove to be one of the richest auriferous regions in the world. The closing of so many mines seems to be mainly due to lack of capital and of good communications.

Fauna

The Costa Rican fauna, in which the tapir and other South American forms are represented, is amazingly rich in bird and reptile life. Parrots, toucans, humming-birds, and members of the gallinaceous family, occur in immense variety, and ornithologists have already described over 400 genera with about 700 species of birds, which is more than twice the number found in the whole of Europe. There are also over 130 known species of reptiles and batrachians, while all the surrounding waters are well stocked with fishes and other animal forms. Amongst these are the valuable pearl and mother-of-pearl oysters, and the purple-yielding murex of the Gulf of Nicoya. Amongst the Simians is a species of white-faced monkeys, some of which have been met wearing a red passion flower as a decoration in each ear (Pittier). Mention is also made of a migratory vampire bat, which at intervals of five to fifteen years invades the south-east coast in millions, and causes such ravages that the people are obliged to emigrate with their live stock. In a single night the vampires bleed the strongest ox to death, and also attack dogs, cats, and even men.

Inhabitants—The Costa Ricans

Of the present inhabitants the great bulk—probably 275,000 out of a total of 294,000—have already been fused in a somewhat homogeneous Ladino population of Spanish speech and culture, and of Costa Rican nationality. As shown by the comparatively tranquil course of events during the independence period, they are certainly a more peace-loving and steady-going people than most other Hispano-Americans. But, despite a certain urbanity of manner and courtesy towards strangers, they "appear to be of a gloomy, unsocial disposition, and, as a rule, the women look as if joy and they had long ago parted company. I missed that buoyancy of character and genial manner which welcome the traveller in Mexico and all the States of South America. Why all this is I know not, for the people are thriving, industrious, and pacific in disposition, while many of them are well educated and highly intelligent. There is also a peasant proprietor class, consisting of hard-working, sturdy farmers who are owners of little areas of coffee plantations, or of carts and oxen engaged in internal trade. This class gives to the country most of its political stability. Wealth is more generally distributed than in any other Spanish-American State, and the taxes are very light. The mental, moral, and material advancement which Costa Rica has made since it emerged from the baneful shadow of Spain is remarkable" (Church, *loc. cit.* p. 79). As in Salvador and Nicaragua, the people are concentrated chiefly in the fertile and salubrious volcanic districts of San José and Corinto almost under the shadow of Torrealba, Irazo, and the other giants of the igneous range.

At the 1892 census, when the whole population

scarcely exceeded 270,000, the foreign settlers numbered a little over 6000. As there is a steady stream of immigration estimated at about 1000 a year, this element probably numbers at least 15,000 at present (1900). The majority still come from Spain, the rest chiefly from Italy, Germany, the United States, and Great Britain. They are for the most part engineers, planters, traders, artisans, and members of the learned professions, and live generally on amicable terms with their Costa Rican neighbours.

The Guatusos and Talamancans

To these must be added the full-blood aborigines who still live apart chiefly in the unsettled northern districts, and in the little known forest tracts of the southern Atlantic slopes, and may be estimated at about 5000 altogether. In the north the dominant Indian nation are the semi-independent Guatusos of the Rio Frio Valley, about whom strange reports have long been prevalent. They have been described as of almost European type, with curly hair, blue eyes, and white or florid complexion, these characters being attributed to some derelict English buccaneers, who strayed up the Rio Frio from the San Juan, and were well received by the natives, with whom they merged in a common " Anglo-American " community. But recent exploration has dissipated this popular myth, and the Guatusos, of whom other strange things were reported, are now known to be a long-haired, coppery-coloured people, like other American aborigines, and in fact most probably a branch of the neighbouring Nicaraguan Chontals.

The scattered tribes of the Atlantic forest zone—Chirripos, Guaymi, Bribri, Cabecars, Bizeitas, Terirs, and

others—are grouped together in a single family, which from its most numerous and best known member takes the name of *Talamanca*. When they were first visited by Vasquez de Coronado in 1564, the Talamancas alone were estimated at 25,000, whereas at present the whole family are reduced to probably less than 3000. All maintain the tribal organisation, and keep up the ancestral speech, usages, and traditions. They dwell, however, in fixed abodes, within the so-called *palenques* or stockades, with thatched roofs projecting beyond the walls down nearly to the ground. In physical appearance they bear a striking resemblance to the Mayas of Yucatan, and like them are a quiet, inoffensive people, who appear to have been formerly more highly civilised than at present. Amongst the objects recovered from the old graves in the Bribri district are some curious little gold statuettes, the workmanship of which displays considerable skill in the prehistoric Talamancan craftsmen.

The gold came probably from the neighbouring Veragua district in Panama, which earned for this region the title of *Costa Rica*, the "Rich Coast." The expression was applied at first to the whole sea-board, at that time known as the Gulf of Columbus, but was afterwards restricted to the auriferous Veragua district, and finally transferred to *Nueva Cartago*, that is, the present Costa Rica, through some confusion in the local nomenclature which has never been cleared up.[1]

[1] Colonel Church suggests that it may be a corruption of *Costa de Oreja*, a name which was applied to a part of the coast of South America during the fourth voyage of Columbus, because some of the many Indians "wore gold earrings, having holes in their ears large enough to admit a hen's egg" (*loc. cit.* p. 77).

Topography

As in Nicaragua, all the chief centres of population are crowded together in the volcanic district on the Pacific slope. Here is the present capital, *San José*, by far the largest place in the republic. It occupies a convenient position 3750 feet above the sea on the central plateau, and is the seat of a university, an observatory, and a national museum. San José has been the capital only since the declaration of independence, when the administration was removed from the neighbouring city of *Cartago*, which had been the seat of government throughout the colonial period. The change was made because Cartago had been founded in 1564 by Vasquez de Coronado in dangerous proximity to Irazu, and had been nearly ruined by an eruption of that volcano in 1723.

Both cities are now railway stations on the transcontinental trunk line, which when completed will traverse the richest and most densely peopled part of the territory, and also connect its two seaports—*Puerto Limon* on the Atlantic and *Puntarenas* on the Pacific Coast. The line has already been carried from Limon for a distance of 117 miles to *Alajuela*, the "Jewel," west of San José, and from Puntarenas on the Gulf of Nicoya for 14 miles inland to *Esparza* (*Esparta*), leaving only a small section between these two points to complete the system. The first twenty miles of the Atlantic section, running through the malarious district of Limon, cost the lives of 3500 men—a worse record than that of Panama. The little headland on which Limon is situated is fringed by a coral reef, on which at low water the polyps putrefy and cause typhoid fevers, while the swamps back of the town are fertile sources of malaria.

But the health of the place has lately been improved by harbour works, and it might be made a first-class port by running a breakwater 3360 feet long to the wooded islet of *Uvita*.

History—Government—Finance

As above stated, Costa Rica has enjoyed more peaceful times during the period of independence than any of the sister republics. It joined the Central American Confederation in 1823 and withdrew in 1840, after which the chief event was its alliance with the other States for the expulsion of General Walker and his American filibusters from Nicaragua. There have also been frontier disputes which, however, have been either peacefully settled, or made the subject of arbitration. The chief internal troubles have been associated with the framing of various constitutions leading to the deposition of presidents or the declaration of dictatorships, but generally with little or no bloodshed. Thus, President Rodriguez proclaimed himself dictator in 1892, and was satisfied with the arrest of his opponents. An attempt was also made in 1894 to assassinate President Iglesias, which led to the arrest of the anarchist Arava and a number of his accomplices.

The present Constitution dates only from 1870, and has since been frequently modified. It vests the legislative functions in a single Chamber of Representatives chosen by electoral bodies in the proportion of one for every 8000 inhabitants, and returned for four years, one-half retiring every two years. The executive is entrusted to a President elected in the same way also for four years, and aided by four ministers for the departments of the Interior, Foreign Affairs, Finance, and War.

Although Roman Catholicism is still the State religion all others enjoy absolute freedom. Education is also free and compulsory, and in 1898 the 330 primary schools had an average attendance of 22,000 pupils. In the same year the revenue amounted to £1,700,000 and the expenditure to £1,600,000. But the country is burdened with a heavy foreign debt, which in 1898 stood at £2,095,000. Arrangements, however, have been made for its reduction and for paying off arrears of interest. It should also be stated that this debt arises out of loans of £3,400,000 which were contracted in 1871 in London for the purpose of building the inter-oceanic railway, for which the State never received more than £1,000,000.

CHAPTER XIV

PANAMA

Extent — Area — Population—Physical Features — Ranges and Passes—Rivers—The Rios Chagres and Bayano—Atlantic and Pacific Tidal Waves—Climate—Rainfall—Flora—Fauna—Inhabitants—Veraguas and Chiriquis—Topography—Panama Railway and Ship-Canal.

Extent—Area—Population

THIS outlying province of the republic of Colombia belongs geographically to Central America, and is the last of the long line of isthmian formations which form so many links in the chain by which the northern and southern Continents have been connected since Tertiary times. At the Costa Rican frontier it trends round from south-east to east, and maintains this normal direction through a series of rhythmical curves for over 400 miles to the Atrato Valley, which, jointly with that of the San Juan, forms the true parting line between Central and South America (see vol. i. *South America*, ch. i.) This is by far the narrowest section of the isthmian region, which here contracts at some points to less than 20 miles between the two oceans, and consequently, despite its great length, has an area of little over 31,500 miles, rather less than that of Ireland, with a sparse population of 285,000, or considerably less than the city of Dublin with its suburbs.

Physical Features—Ranges and Passes

Through the *Cordillera de Chiriqui* the Costa Rican orographic system passes into Panama, which it traverses in its entire length to the Gulf of Darien under various sectional names, such as the Cordilleras of *Veragua* and *San Blas*. These cordilleras do not form a continuous mountain range, but rather a number of loosely connected ridges, spurs, and offshoots, which decrease generally in altitude in the direction of the east, and are here and there crossed by historical passes which fall below 300 feet, and are the lowest that occur anywhere in the isthmian lands, or in fact anywhere between the Atlantic and the Pacific.

It seems obvious that here also the two oceans formerly communicated through several channels, and that Panama, like other parts of Central America, constituted an insular chain, which has since been merged in continuous land partly by volcanic, partly by meteoric agencies. This may be even inferred from the geological constitution of the uplands, which consist in the west of comparatively recent eruptive rocks, and elsewhere largely of granites, gneiss, dolerites, trachytes, and crystalline schists.

In the extreme west, where the Panama highlands attain their greatest elevation, the Central American igneous system is continued by three apparently extinct volcanoes—*Pico Blanco* (11,740 feet), *Rovalo* (7020), and *Chiriqui* (11,265), which maintain the alignment of the Costa Rican cones. Even here the range is crossed by two passes east of Chiriqui, which fall to 3600 and 4000 feet. Beyond them the Cordillera again rises to a mean height of 8000 feet, and here runs much nearer to the Atlantic than to the Pacific coast. But in the

Veragua section the highest peak—*Mount Santiago*—falls to about 6300 feet, while few others exceed 4000 feet. West of Veragua the system becomes fragmentary, and, so to say, dislocated, culminating in *Mount Capira* (5000 feet), on Panama Bay, and then falling to 700 in the *Ahoga-Yeguas* hills, which are crossed by a pass only 380 feet high, followed by the still lower *Culebra Pass* (290 feet), where the isthmus itself contracts to a little over 34 miles in a bee line from sea to sea. In the San Blas section, with a mean altitude of less than 2000 feet, the highest peak scarcely exceeds 3000 feet, and here the isthmus narrows to about 18 miles between San Blas Bay on the Atlantic and the head of the tide waters in the Rio Bayano on the Pacific side.

Rivers—The Rios Chagres and Bayano

Several of the isthmian streams descending from the central uplands have a somewhat lengthy course, their lower valleys being disposed parallel with the coast. But their basins are too narrow to send down any great volume except during the floods. Thus none are navigable beyond their estuaries, being too shallow in the dry season, and too impetuous during the heavy rains, when they often rise suddenly 20, 30, or even 40 feet above their normal level, and sweep with tremendous force and velocity down to the coast.

Such is the regime of the *Rio Chagres*, which has its source in the centre of the isthmus, and has hitherto proved one of the most formidable obstacles that the constructors of the Panama ship-canal have had to contend with. After its junction at Matachin with its chief tributary, the *Obispo*, descending from the Culebra uplands, it flows directly to the north coast near Colon

(Aspinwall), where the entrance is obstructed by a bar with an average depth of about 10 feet. In ordinary years its level ranges from 14 to 40 feet with the seasons; but unusually heavy rains may at times cause an absolute rise of as much as 40 feet, with a discharge of from 65,000 to 70,000 cubic feet per second. The difficulty of controlling such a volume rushing at tremendous speed down a narrow valley seems insurmountable, and all attempts at regulating these sudden freshets have hitherto proved ineffectual. The very railway bridges of the interoceanic line running from Aspinwall to Panama are occasionally submerged to depths of 15 or even 20 feet, while immense damage is caused to the works on the Atlantic section of the canal.

On the Pacific side the *Rio Bayano* presents fewer obstacles, because the western slopes are drier. But the bar at the entrance to its broad estuary is only two or three feet deep at low water, while the bay itself shoals so gently that large vessels have to ride at anchor four or five miles off the coast. Hence costly harbour works will be required at the Pacific entrance whenever the ship-canal reaches the Gulf of Panama.

Atlantic and Pacific Tidal Waves

Account will also have to be taken of the tides, which vary considerably with the seasons, and are, moreover, much higher at Panama than at Aspinwall. In Colon Bay the difference between ebb and flow seldom exceeds 12 or 14 inches, and is often scarcely perceptible for days together, whereas in Panama Bay it is as much as 8 feet in the early summer (May and June), when it is least felt, and rises to 20 or even 23 feet in winter, the average for the year being 13 or 14 feet, that is, as

many feet as inches on the opposite side. The consequence is that, in an open canal without locks, no equilibrium could be established, the current constantly shifting with the alternating tidal currents.

Climate—Rainfall

The Carribean sea-board, swept by the warm waters of the Gulf Stream, and exposed to the moisture-bearing Atlantic winds, is both hotter and wetter than the Pacific slopes. But even here the normal temperature and rainfall are high enough to justify the evil repute in which the whole isthmus is held as one of the most unhealthy regions in tropical America. Throughout the year the glass seldom falls anywhere much below 70° F., but often rises considerably above 100°, the average being about 84° at Aspinwall and 80° or a little under at Panama. In the late summer and autumn months, when the *nortes* are replaced by the *vendavales*, or south-eastern trade winds, the Atlantic coast-lands are occasionally visited by terrific cyclones, such as that of October 1865, which wrought destruction amongst the shipping at Aspinwall, and was felt as far north as Cape Gracias à Dios. Thanks to these monsoons the annual rainfall often exceeds 120 inches on the Atlantic side, or about double the discharge on the Pacific coast. But malarious affections are everywhere prevalent and yellow fever a frequent visitor, so that Panama still remains the *Sepultura de Vivos*, the "Living Grave" of Europeans, as it was named by the first Spanish settlers. The mortality of the hands engaged on the railway and canal works—mostly mulatoes from Jamaica or Columbian half-breeds—has often exceeded 100 per 1000, even according to the official returns, which tend rather to minimise than exaggerate the risks.

Flora—Fauna

To the high temperature and precipitation corresponds a tropical vegetation of amazing exuberance and variety, especially in the southern districts, where the Central

CHRYSOTHRIX.

and South American forms are intermingled. Even the rocky headlands are clothed with verdure to their summits, while the running waters disappear beneath a dense tangle of overhanging branches, trailing or climbing parasites, stems, snags, and matted foliage. Soon after leaving the Atlantic terminus, travellers by

the interoceanic railway find themselves surrounded by scenes of tropical splendour, such as can scarcely be surpassed even in the Brazilian woodlands. Cacao shrubs, palms, bananas, and bread-fruit trees stretch their branches and foliage out on both sides, while the saturated soil is covered by a luxuriant growth of water-plants of the most varied colours. The air also is alive with birds of gorgeous plumage,—tanagers, toucans, humming-birds, and euphonias (*Euphonia musica*), the songs of many being varied by the discordant chatter of the monkeys springing wildly from branch to branch, and by the screaming of noisy parrots. Amongst the few indigenous forms is the *Chrysothrix*, a species of monkey which is confined to the Chiriqui district and will not live elsewhere. Most of the other mammals and other animals—tapirs, peccaries, pumas, jaguars, alligators, ant-eaters, climbing porcupines, iguanas, deer, vampires—are common to all the surrounding lands.

On the other hand, the Atlantic and Pacific marine shells, despite former interoceanic communications, present specific differences, while all belong to the same genera. The inference is that the channels must have been closed in times sufficiently remote to allow for the development of specific local forms. This remark applies equally to the marine molluscs throughout the whole of the oceanic waters as far north as the Gulf of California and Mexico, so that Central America would appear to have formed continuous land with the northern and southern continents probably since the Miocene or Middle Tertiary period.

As on the neighbouring Sierra de Santa Marta, butterflies abound, and at times rise on the slopes of the mountains in dense clouds, darkening the sunshine. To them the whole region possibly owes its name. Crevaux

tells us that one of the rapids on the Paru river in French Guiana is called *Panamá*, that is, "butterfly," by the Rucuyennes, who are of Carib stock. To the same family appear to have also belonged the now extinct Dariens, who formerly dwelt on the north-west side of the isthmus, about the large inlet from them named the Gulf of Darien. Other Carib groups, some still living, had in prehistoric times formed settlements all along the sea-board as far north as Honduras, so that an expressive word applied by them to this part of the coast may very well have obtained currency and been adopted by the early Spanish explorers.

Inhabitants—The Veraguas and Chiriquis

At present no group of Carib speech is known to inhabit any part of the isthmus, although there are traditions that some of the warlike tribes in the central districts south of San Blas came originally from the Goajira peninsula, which is still held by a powerful Carib nation. In recent years they have nearly all been absorbed in the general population—a mixture of Indians, whites, and mulatoes, in which the coloured element is most pronounced. It is due to the large number of Jamaicans who were attracted to Panama by the high rate of wages on the railway and canal works, and many of whom afterwards settled in the country. The movement, unless arrested, must eventually assimilate the isthmus to those parts of the Antilles where the African element predominates. In the eastern districts most of the aborigines, such as the *Dariens* or *Papaparos*, are extinct. But others, such as the *Chocos*, *Queves*, and *Tules*, still survive and constitute the CUNA family, whose affinities appear to be with the Chocos and Baudos

of the Atrato and San Juan valleys in Colombia proper (see Table, Ch. III.)

On the other hand, the *Veraguas* and *Chiriquis*, formerly dominant in the west, where they still form the bulk of the population, have abandoned the tribal system, with the associated usages and traditions, and are scarcely now to be distinguished from other Hispano-Americans of Spanish speech and culture. Nevertheless they had in pre-Columbian times a culture of their own, and thus formed a link in the chain of more or less civilised nations which extended, with interruptions from the Pueblos of Arizona, through Mexico and Central America into Colombia, Peru, and Bolivia.

Like some of the neighbouring Costa Ricans (see above), the Veraguas of the auriferous district named from them were specially noted for their taste and technical skill in the goldsmith's art. Throughout the western section of the isthmus, between the Chiriqui inlet and Panama Bay, occur numerous prehistorical *huacas* (graves or barrows), which have yielded an abundance of gold and other artistic objects that had been deposited with the dead. Similar graves, some of large size, extend as far as the Gulf of Nicoya, but the objects found in them—obsidian, greenstone, and finely-wrought jade tools and ornaments, knives, axes, armlets, rings, figures of men and gods, etc.—have been ascribed to Aztec influences, or even to the Aztecs themselves, who are now known to have ranged from Nicaragua into the adjacent parts of the present Costa Rica territory. Some of the barrows visited by Colonel Church in the district east of Guapiles are 100 feet long, 75 wide, and 15 high. "They appeared to be filled with broken statues of men, women, animals, and other objects sculptured from volcanic rock. We cut the weeds and

exposed an immense statue, which must have been 10 feet high," besides "a fine, life-size specimen of the head of an alligator and one of a puma" (*loc. cit.* p. 83). But no mention is anywhere made of architectural remains or of any monuments at all comparable to those of the Mayas and Incas. In this respect the culture of these Costa Rican and Panama peoples shows more affinity with that of the Colombian Chibchas, who were also famous jewellers and goldsmiths.

Topography—Panama Railway and Ship-Canal

In Panama the only important centres of population are *Colon* or *Aspinwall* and the city of *Panama*, respective Atlantic and Pacific termini of the long completed inter-oceanic railway, and of the still unfinished ship-canal. Neither of them has a harbour at all adequate even to present requirements, and should the canal ever be carried through, the approaches will have to be greatly improved and extended. Although only 90 miles long, the railway, constructed by an American company and opened in 1855, already forms an indispensable link in the intercommunications of the two hemispheres. It reduces the distance from New York to Hong-Kong by 5000 miles (from 16,965 to 11,965 miles), and, allowing for transhipment of freights, opens a direct route for general traffic between Europe and the Pacific sea-board of the New World. Hence the transit trade on this cosmopolitan line is steadily increasing, and rose from a little over 200,000 tons in 1894 to nearly 300,000 in 1899.

But the necessity of breaking bulk is a great drawback, and the railway was built, not as a substitute for a ship-canal, but rather with the view of furthering that

project. It was felt that there will be abundance of business for both, and that the success of the one must necessarily re-act favourably on the prospects of the other.

Nevertheless, owing partly to inherent difficulties, but much more to gross mismanagement and misappropriation of vast sums contributed by an over-confiding public, the

PANAMA.

prospects of the canal are at present far from bright. The French company, which was formed in 1881 under the superintendence of M. de Lesseps, to construct a navigable canal 46 miles long across the isthmus at its narrowest part, mainly following the line of the railway, had raised a capital of £31,000,000 by June 1886. The works had already been commenced, but although much money had disappeared comparatively little progress was made. Hence the attempt made in 1888 to increase

the capital by £24,000,000 met with little success. Reports of bribery and corruption filled the air, struck at high names, and became crystallised in the expression "Panama Scandals." After an unsuccessful effort to form a new company, the original corporation had to go into liquidation, suspending both payments and operations in 1889. In 1893 a further extension of the time

PANAMA CATHEDRAL.

limit was granted by the Colombian Government, with a view to the formation of a new company, which came into being in 1894, when the works were provisionally resumed.

Since then about 3000 hands on an average have been employed, and it is expected that the project may be carried through about the year 1908. In 1897 an additional sum of nearly £2,000,000 was raised, and of this about one-half has been expended, £700,000

being deposited as guarantee against a renewal of the scandals. Meanwhile an exclusively American association, called the *Panama Canal Company of America*, was incorporated in December 1899, and is stated to have acquired all French interests in the undertaking. This body is empowered to quadruple its capital, to enlarge, complete, and work the partly built canal, run steamship lines, construct wharves and warehouses, and make arrangements with any Government respecting the completion and operation of the canal. The object is to thwart the rival Nicaraguan scheme, by inducing the United States Government to purchase all interests in that of Panama. But see p. 239.

CHAPTER XV

THE WEST INDIES: GENERAL SURVEY

The American Mediterranean—The Greater Antilles—Orographic System—The Bahamas—Coralline Formations—Communications between the Inland and Oceanic Waters—The Lesser Antilles—Nomenclature—"Windward" and "Leeward"—Inner and Outer Insular Chains—Cyclonic Disturbances—Antillean Vegetation—Indigenous Fauna—Mineral Resources.

The American Mediterranean

INCLUDING the secondary bays, bights, and other inlets round its periphery, the American Mediterranean has a total area estimated at 1,365,000 square miles, of which 615,000 are comprised in the Gulf of Mexico, and 750,000 in the Caribbean Sea. A careful study of the marine bed, with its now partially or wholly submerged mountain ranges, extensive plateaus, slopes, and banks, here and there still almost flush with the surface, plainly shows that these inland waters represent an area of subsidence, parts of which formerly stood at some considerable elevation above the sea, and probably along its eastern border formed continuous land with the northern and southern continents.

But of such a land connection nothing now remains except a large number of insular masses, clusters, and chains, which collectively describe a vast curve over

1000 miles long from near the Peninsula of Yucatan south-eastwards to the Gulf of Paria. From this point the curve bends sharply round to the west along the Venezuelan sea-board, where it terminates near the Goajira Peninsula, making a total length of not less than 2000 miles. Including rocks, keys (cays or reefs), and raised banks, the islands and islets must be reckoned by the thousand, of which, however, scarcely fifty are inhabited. These vary in size from five to 45,000 square miles, and represent a total area of a little over 90,000 square miles, with a population of about 5,000,000.

The Greater Antilles

To the whole system are indifferently applied the terms WEST INDIES and ANTILLES, and although the former is erroneous and the latter of doubtful origin, both are too firmly established to be now set aside. The Antilles, again, are decomposed into two main sections—GREATER and LESSER ANTILLES — which are convenient expressions fully justified by the actual conditions. The first section is, in fact, about eight times larger than the second, the respective areas being 86,500 and 10,500 square miles, and has nearly three times the number of inhabitants (3,690,000 and 1,300,000 respectively). It comprises the four large islands of CUBA, JAMAICA, HISPANIOLA, and PUERTO RICO, which are disposed in the normal direction from west to east, rest on a common submarine bed, and belong unquestionably to the same geological and orographic systems.

Orographic System

In their general features these islands present the aspect not so much of an insular as of a disrupted

continental domain, which at one time extended continuously for 1200 miles from the western extremity of Cuba to the Virgin Islands, from which they are now scarcely separated by a shallow, reef-studded passage, and with which they were formerly connected by dry land. This extensive and now partly submerged tract was traversed in its entire length by an unbroken lofty range, whose roots are embedded in the surrounding marine waters, and whose crests still tower thousands of feet above sea-level. Culminating in Hispaniola, central member of the chain, with peaks nearly 12,000 feet high, the system maintains a considerable elevation in its western section, where the uplands rise to heights of 8000 and 7000 feet in Cuba and Jamaica, but falls rapidly eastwards to less than 4000 feet in Puerto Rico, and 1500 in St. Thomas, highest of the Virgin group.

In their diversified geological features the Greater Antilles also reveal their continental character, and justify the assumption that they were once connected with the Central American mainland, through two now submerged ridges, represented in the north by the *Little* and *Great Caymans* and the *Misteriosa Bank*, and in the south by the *Pedro, Serranilla, Serrana*, and other cays. The uplands consist largely of late secondary clays and conglomerates, which were later overlain in shallow waters by calcareous marine sediments, and then upheaved to constitute the white limestones which are so widely diffused throughout all the islands.

Through these calcareous masses crop out crystalline and plutonic rocks of the granite, porphyry, and basalt types, all much older than the eruptive rocks of the Lesser Antilles, and nowhere showing traces of craters or any recent volcanic discharges. They also plunge to prodigious depths below the surface of the neighbouring

waters. Even the slopes of the relatively low Puerto Rico heights descend on the north side to a depth of 24,000 feet in the Brownson Deep, giving a total declivity of over five miles. In Hispaniola the absolute incline approaches 30,000—12,000 above and 18,000 below the surface—while the Cuban Sierra, Sierra Maestra, has a relief of 26,000 feet, measured from the sea-bed to the highest summits above the sea. In fact, the configuration of these ranges is the most precipitous in the world, exceeding that of the Himalayas themselves, which would be comparable with them were their bases rooted in marine waters to a depth of three to five miles.

The Bahamas—Coralline Formations

North of the Greater Antilles a vast space is covered by the low-lying Bahaman or Lucayan Archipelago, which is sometimes grouped with the Lesser Antilles, but really forms a world apart. As will be seen in a later chapter, it consists exclusively of low coralline reefs and islands, whose affinities are, not with any of the Antilles, but rather with the neighbouring limestone peninsula of Florida, largely a consolidated coralline archipelago.

The statement that much of the dry land in other tropical regions rests on foundations laid by the industrious polyps is borne out by the extent of the work accomplished by them in the Bahama and neighbouring waters. "The coral-builders are at work over a vast range, which is estimated at one-fourth of the marine surface of the region. To their incessant toil must be largely attributed the formation of much of the calcareous plateaux by which the Yucatan and Florida straits are contracted on both sides, as well as of those

rocky ledges which are washed by high tides, and are revealed only by sandy dunes, such as the Salt Key, or by their fringe of mangroves, like some of the Florida keys, and Anegada with its prolongation, the dreaded Horse-shoe Reef, connecting it with the Virgin Islands. More than half the Cuban sea-board, the various groups of the Bahamas, the eastern members of the Lesser Antilles, and the Bermudas, are largely of coralline origin."[1]

Communications between the Inland and Oceanic Waters

The Greater Antilles are so disposed that at their western extremity they nearly convert the Gulf of Mexico into a closed basin, which is accessible only through the *Florida* and *Yucatan Channels*. At the same time they enclose the Caribbean Sea on the north side, where it is accessible from the Atlantic, only through three openings—*Windward Channel* between Cuba and Hispaniola, *Mona Channel* between *Hispaniola* and *Puerto Rico*, and *Anegada Passage* in the extreme east between the Virgin Islands and the Lesser Antilles. Of all these approaches from the North Atlantic to the inland waters the three westermost are guarded by Cuba, and it is to this fact that is due the paramount strategical importance of this island, especially for the United States, to which it was ceded by Spain in 1898.

By the simultaneous acquisition of Puerto Rico the same power secured the command of the eastern entrances (Mona and Anegada); but these are strategically of less importance, because on its east side the Caribbean Sea is accessible from the Atlantic through several easy

[1] R. T. Hill, *Cuba and Porto Rico*, 1898, p. 15.

channels flowing between the long chain of the Lesser Antilles.

The Lesser Antilles—Nomenclature—"Windward" and "Leeward"

Towards the Atlantic this insular chain presents its more abrupt escarpments, inclining more gently westwards to the inland seas. It is thus seen to stand on the eastern verge of the old isthmian region, which is now for the most part submerged beneath the waters of the American Mediterranean. Here is developed between Anegada Passage and Grenada a regular crescent, which has its convex side facing the Atlantic, and is thus exposed to the full fury of the easterly gales. Hence all the members of the crescent, which is also comprised under the designation of the *Caribbee Islands*, are properly the *Windward Isles*, while those skirting the Venezuelan coast, and sheltered by the outer curve, are the *Leeward Isles*.

But these expressions are not so used by English writers, who call the northern half of the crescent from the Virgins to Dominica the "Leeward," and the southern from Martinique to Grenada the "Windward" Isles, leaving the Venezuelan without any collective name. Unfortunately for this misuse of the terms there is now no remedy, because it is permanently established by official usage. The great majority of the islands belong to England, and form two administrative divisions—the "Leeward" in the north, and the "Windward" in the south. It may be noticed that the northern division consists of a double chain, so that in a sense the members of the inner chain—Santa Cruz, Saba, St. Eustatius, St. Christopher, Montserrat, Nevis—are leeward in

respect of those of the outer chain—St. Thomas, St. John, Anegada, Anguilla, St. Martin, St. Bartholomew, Barbuda, Antigua, and to this arrangement may be due a local use of the term "Leeward," which was afterwards extended to both chains.

Outlying members of the Lesser Antilles, not usually comprised under either designation, are Barbados to seaward of St. Vincent, and Trinidad with Tobago, belonging geologically to the Venezuelan mainland. To the same formation belongs also the true Leeward group—Margarita, Tortuga, Orchilla, Birds (Aves), Buen Ayre, Curaçao, and Oruba—for which the reader is referred to the volume on *South America*, chap. iv.

Inner and Outer Insular Chains

Of the two chains in the northern division the inner circle represents the original main range, while the outer consists chiefly of secondary and dependent features, and terminates abruptly at Marie Galante near Guadaloupe. The inner circle, on the contrary, is continued with great uniformity through the southern division to Grenada, its true terminal point, and thus describes the segment of a circle between Anegada and Trinidad as symmetrical as if drawn with the compass. It constitutes an igneous range, now mostly submerged, and of considerable age, though still younger than the plutonic system of the Great Antilles. The islands, rising precipitously above the surface, and mostly clad to their summits, represent the old volcanic cones, which attain a height of 5340 feet in Dominica, culminating point of the system. Even the little Grenadines, which look like a cluster of coralline reefs, extending from St. Vincent to Grenada, are largely of igneous origin, and appear to represent the

scattered fragments of a great volcano disrupted during some tremendous outburst in late Tertiary times.

On the other hand, the outer circle represents an area, not of subsidence, but of upheaval, being raised on the submerged seaward slope of the inner chain. With the exception of Antigua, which is partly igneous, all its members are of marine origin, the work of the polyps, consisting of coralline reefs below and of the prevailing white limestone above, but nowhere attaining a height of more than 2000 feet. At first sight Barbados, lying to the east of St. Vincent, might seem to form part of the coralline outer chain; but its formation is quite different, and this easternmost of all the Antilles would appear to form a seaward continuation through Trinidad and Tobago of the Venezuelan mainland, with which it may have been connected perhaps in Secondary times.

Cyclonic Disturbances

But all alike, having the same geographical position relatively to the Caribbean Sea and the Atlantic, have to bear the brunt of the monsoons, which in these waters occasionally assume the character of terrific cyclones. They occur most frequently in August, September, and October, and are distinguished from ordinary storms by the wind blowing with the utmost violence successively from all points of the compass, uprooting the strongest trees, and at times destroying whole cities. On 2nd August 1837 some houses in St. Thomas were actually turned completely upside down by one of these destructive hurricanes. A large, well-built house was on the same occasion torn from its foundations and planted upright in the middle of the street. The fort at the entrance of the

harbour was utterly demolished and its guns flung headlong down to the sea. On 25th July 1825 a whirlwind burst over Guadeloupe with such force that many strongly constructed houses were dashed to the ground, and tiles from the roofs were hurled through thick doors into the warehouses.

On such occasions the sea is often lashed to a state of the wildest frenzy. The waves, upheaved by sudden gusts of wind from opposite directions, rush madly against each other, the violence of the collision raising the billows mountains high, and sending dense volumes of foam far above the tallest masts; the sea heaves and tosses as in a seething cauldron, and the white-crested breakers cover the bosom of the deep far and wide. The stoutest vessels run imminent danger in the raging struggle of the tumultuous waters—now suspended in mid-air on the crests of the waves, now disappearing in the yawning trough of the sea.

A sure forerunner of these natural convulsions in the tropics is the rapid depression of the barometer. Like the typhoons of the eastern seas, they are caused by the sudden expansion of the heated and rarefied air. Over the warm waters of the tropics, where they are bred, a slight disturbance of the equilibrium of the atmosphere may easily arise, influencing a vast extent of surface, and causing the warm air charged with moisture to rise in broad columns to the higher and cooler regions above. The vapour thus borne aloft, while condensing into clouds, imparts its heat to these upper currents, thereby causing a further upward tendency. Under the ascending columns the atmospheric pressure is necessarily diminished, and so arises the rarefied centre or vortex of the cyclone, the inrushing air rotating with intense rapidity round this central point, which does not remain

stationary, but receives a progressive motion varying considerably in velocity.

In the West Indies the average speed is from 15 to over 20, but in higher latitudes from 28 to 34, and often even 50 miles an hour. But even in the Antilles the destructive hurricane of 7th August 1899 acquired a phenomenal velocity of over 100 miles an hour. On this occasion the island of Montserrat was completely devastated, all the churches, estates, and villages being ruined, and hundreds of the inhabitants killed, injured, or rendered homeless. Great havoc was also caused in the neighbouring island of Guadeloupe, where Le Mourle, a place of 10,000 inhabitants, near Pointe à Pitre, was half-demolished, and much damage done in the more exposed islet of Marie Galante. The tornado fell with tremendous force on Puerto Rico, where immense havoc was wrought at Playa de Ponce on the south coast, at San Juan on the north side, and in many other districts. Several towns and villages were blotted out, thousands of cattle were destroyed, hundreds of people perished on the plantations, and the total loss of lives was reported at over 2000 in the Ponce district alone. The whole of the south coast was swept clean, and as many as 100,000, or one-eighth of the inhabitants, were stated to have lost all their effects.

Antillean Vegetation

But in this exuberant insular world Nature soon recovers herself. Despite the damage done by such outbursts, by the emancipation of the slaves, the clearance of the forests, the impoverishment of the land, and the competition of European beet-sugar growers aided by State bounties, the agricultural resources of the Antilles

are still far from exhausted, while they surpass those of most other tropical regions in variety and excellence. Here flourish the sugar-cane and coffee-berry of prime quality, besides the cotton-shrub, cacao, tobacco, and other plantation produce in endless diversity. Amongst the more valued minor products, some of which are daily acquiring greater importance in the markets of the world, are pimento (Jamaica pepper, or allspice), vanilla, ginger, cloves, cassia, jalap, arrowroot, ipecacuanha, sarsaparilla, bananas, pine-apples, yams, batatas (sweet potatoes), manioc (from which tapioca is prepared), rice, bread-fruit, and coco-nuts.

Indigenous Fauna

The indigenous fauna is poor compared with that of the neighbouring mainland, while most of the animals are of different species, showing that the land connections have been severed from remote times. Nearly all the orders most characteristic of South and Central America are absent. There are no monkeys, no jaguars, pumas, tiger-cats, wild dogs, or coyotes, and no edentata (sloths, ant-eaters, and armadillos). A species of agouti found in St. Vincent, St. Lucia, and Grenada, is the largest native mammal. Besides these there exist only bats, two species of insectivora totally unlike any found in North and South America, and a few species of rodents.

Of the 203 distinct kinds of birds 177 are peculiar to the Antilles, but in general character they are allied to tropical American forms, and comprise humming-birds, parrots, trogons, tanagers, and chatterers. Snakes are fairly numerous, while lizards occur everywhere in great variety and abundance. Amongst the reptiles is the

much-dreaded poisonous *fer-de-lance*, numerous in St. Lucia and Martinique, and the *Cribo* (*Coluber variabilis*), a large harmless snake which often attacks the fer-de-lance, and in spite of his venom kills and eats him. The iguana is found in the Greater Antilles, and, as in South America, is eaten by the poorer inhabitants. Tree-frogs are also abundant, but there is no representative of the newt and salamander tribes (tailed Batrachians), of which so many kinds occur in the not very distant southern States of the American Union.

The Antillean waters teem with many varieties of fish and turtles, while most of the islands are well stocked with European domestic animals, and even with rats and mice, and to these may possibly be due the extermination of some of the smaller indigenous quadrupeds. Deer and guinea-fowl have multiplied in Barbuda, where they were introduced some years ago, and are now hunted as wild game.

Mineral Resources

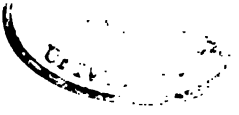
Minerals are absent from most of the smaller groups, but are found in greater variety, if not in abundance, in the Greater Antilles, and especially in Cuba, than is commonly supposed. Here also asphaltum is widely diffused both on the land and in the neighbouring waters. "At and near Cardenas the deposits are found in the bottom of the bay, and the method of securing it is peculiar. A shaft 80 feet or more in depth below the surface extends into the sea-bottom, and into this the asphalt runs or filters. It is supposed that the supply is brought from the interior through the subterranean rivers which prevail in this locality—from which indeed Cardenas gets its water-supply. Over this shaft the ship is anchored; from her deck a heavy bar of iron

attached to a rope is dropped, and the asphalt is broken from the sides of the shaft and falls to the bottom, where it is scooped up into a net and loaded into the vessel. As this work has been going on for years, and the asphalt replenishes itself constantly, it is fair to suppose that the run will go on for ever." [1]

Of metals strictly so called the most important are iron, copper, gold, and manganese, all of which occur only in the Greater Antilles. Coal also is confined mainly to Puerto Rico and Hispaniola, being absent from Cuba and Jamaica. This limited supply of mineral treasures may be explained by the wide diffusion of the non-carboniferous white limestones of marine origin. They are uplifted masses of coralline formation, in which there could be no intrusion of metallic ores, except at a few points exposed to volcanic agencies.

For the constituent elements and general relations of the inhabitants of the Antilles the reader is referred to Chapter II., and to the APPENDIX for a tabulated statement of areas, populations, historical and other details of the various insular groups.

[1] R. P. Porter, *Industrial Cuba*, 1899.



CHAPTER XVI

THE AMERICAN ANTILLES: CUBA AND PUERTO RICO

A Change of Flags — CUBA: Extent — Area — Population — Physical Features—Fringing Reefs—Upheaved Beaches—The Eastern Uplands—The Sierra Maestra—The Western Heights and Central Plains—Cuban Scenery—Rivers—Climate—Flora—Tobacco Plantations—Sugar and Coffee Culture—Mineral Resources—Inhabitants—The Aborigines—The Negroes—The Cubans—Topography. PUERTO RICO: Extent—Population—The Surrounding Waters—Brownson's Deep—Configuration—General Relief—Flora—Fauna—Minerals—Inhabitants—Aborigines—Negroes—Whites—Material and Social Progress—Topography.

A Change of Flags

AFTER her withdrawal from the mainland of the New World in the first quarter of the nineteenth century, Spain still retained possession of two West Indian islands —Cuba, the largest, and Puerto Rico, the smallest of the Greater Antilles. But these also had to be relinquished as perhaps the most important issue of the Spanish-American War of 1898. By the treaty signed by the Peace Commissioners at Paris on 11th December of that year, Puerto Rico was ceded absolutely, and Cuba contingently, to the United States.

The agreement, as affecting the larger island, leaves it in a condition of nominal independence, while it is held in military occupation by American forces pending final arrangements.

What the result will be can scarcely be doubted. A military Governor-General has already been appointed, and dependent on him are military governors for the capital—Havana—and the six administrative departments. But a permanent military tenure so directly opposed to the democratic spirit of American institutions is not contemplated, but regarded merely as a temporary expedient, to be replaced in due course by the voluntary acceptance of the status of American citizens by the inhabitants. Should these expectations be fulfilled, Cuba will enter the Union as one of the Federal States, in the full enjoyment of local self-government under the central authorities. Meanwhile she enjoys, almost for the first time in her chequered history, absolute protection for life and property, and final relief from a crushing despotism, and the many other intolerable burdens of the Spanish colonial administration.

Cuba: Extent—Area—Population

The title of "Pearl" or "Queen of the Antilles," bestowed on Cuba by her late rulers, is in every respect fully justified. This "fairest land the eye had ever seen," as she was described by her discoverer Columbus, presents the outlines of a hugh hammer-headed shark with its mouth turned towards Hispaniola, and stretching east by south for a distance of about 730 miles between the Yucatan and Windward Channels, 130 and 60 miles broad respectively. But the average breadth scarcely exceeds 50 miles, so that the total area, including the adjacent Isle of Pines, falls a little below 46,000 square miles, which, however, is about exactly one-half of the collective area of the whole of the Antilles (90,000 to 91,000 square miles). But the population,

which should proportionately be about 2,800,000, barely exceeds 1,630,000 according to the latest estimates, and is largely concentrated in the western districts. Under the Spanish rule Cuba was divided for administrative purposes into three provinces and six divisions, with areas and populations before the war as under:—

Provinces.	Divisions.	Area in sq. miles.	Pop.	Chief Towns.	Pop.
West	Pinar del Rio	5,500	200,000	Pinar del Rio	22,000
	Havana	3,200	480,000	Havana	200,000
	Matanzas	3,100	300,000	Matanzas	90,000
	Sta Clara	8,400	340,000	Sta Clara	20,000
Central	Puerto Principe	12,300	70,000	Puerto Principe	46,000
East	Santiago	13,370	250,000	Santiago	72,000
	Total	45,870	1,640,000		

Physical Features—Fringing Reefs—Upheaved Beaches

In its general relief Cuba may be described as hilly, with moderately elevated ridges, fertile slopes, and valley in the west; more open, with broad, gently inclined plains, broken here and there by low forest-clad hills in the centre; and distinctly mountainous in the east. On both sides the rock-bound coasts are indented by numerous deep inlets, which, being usually bottle-shaped with narrow necks, form excellent harbours. In this respect Cuba is more favoured by nature than most other insular regions, and presents a striking contrast especially to the monotonous sea-board encircling the Gulf and Caribbean Sea. But the approaches are often obstructed by long chains and clusters of keys or fringing coral reefs, which range from one or two acres to 140 square miles in extent, and of which as many as 570 have been enumerated on the north, and 730 on the south side. *Romano*, the largest, lies a little west of Puerto

Principe, while the opposite coast is skirted for miles by the so-called *Laberinto de doce leguas*, the "Twelve League Maze," which runs from Santa Cruz in the direction of the *Isle of Pines*, the only important insular dependency with an area of 1214 square miles.

The coast, which has a total length of 2000, and including all the islets and inlets, of nearly 7000 miles, is extremely rugged and precipitous in the east, where are developed a series of terraced formations rising to a height of over 600 feet, and representing so many successive stages in the gradual upheaval of the land above the surrounding waters.

The Eastern Uplands—The Sierra Maestra

Above and between the terraces runs the *Sierra Maestra*—that is, the main eastern range, which east of Santiago is known as the *Sierra del Cobre*. Here *La Gran Piedra* towers to a height of 5200 feet, while the whole system culminates close to the coast in the precipitous *Pico del Turquino*, with an estimated altitude of 8600 feet. All these eastern uplands, consisting of Secondary and early Tertiary shales and conglomerates, with intrusive eruptive matter and white limestone incrustations on the seaward terraces, are thickly wooded to their summits, plants of the cactus type on the lower and drier slopes being succeeded in the moist upper regions by wide bands of graceful tree-ferns.

The Western Heights and Central Plains

In the extreme west the province of Pinar del Rio is traversed by the *Sierra de los Organos*, the "Organ Range," which culminates in the *Pan de Guajaibo* (2530 feet) west of Havana. Here the formations are mainly

Triassic, Jurassic, and early Tertiary, their crests clad with the pine (*P. cubensis*), while the slopes and flanking southern valleys are covered with the world-famed *Vuelto Abajo* tobacco plantations.

On the more open central plains, between the eastern and western mountain systems, sugar takes the place of tobacco, while almost all tropical products flourish in the rich and well-watered northern and southern declivities. Here the water-parting between the streams flowing north to the Atlantic and south to the Caribbean Sea is not continuous, but may be traced through a series of low, disconnected wooded hills—eastern offshoots of the Organos range—which traverse the plains of Havana, Santa Clara, and Puerto Principe, and are probably the weathered and eroded remains of the central section of the mountain range which formerly intersected the island in its entire length.

These low, flat foldings, which approach the north coast between Havana and Matanzas, combine with the highly cultivated level plains and running waters to produce some of the most delightful scenic effects in the world. They have also served other purposes, and during the revolts against the Spanish rule often afforded safe retreats to the insurgents. It was from this base that they were able so frequently to harass the less mobile regular forces, and extend their incursions to the outskirts of the capital and the other large coast towns. The *Tetas de Managua*, the *Pan de Matanzas*, and numerous other wooded heights of the central plains, have played the same part in Cuban warfare that the "kopjes" have in South Africa.

Cuban Scenery

It is in the provinces of Matanzas and Santa Clara that Cuba's most charming valleys are encountered.

One of the most attractive features, the Mecca of every tourist, is the peculiar circular basin west of Matanzas, known as the valley of the *Yumuri*. This comparatively level depression is some five or six miles in diameter,

Underwood Photo.

YUMURI VALLEY, CUBA.

and dotted with picturesque estates and long avenues of royal palms. Through its centre winds the beautiful Yumuri river, which finds an outlet at Matanzas through the vertical walls of a picturesque canyon. It is enclosed on all sides by steeply sloping walls rising some 500 or

600 feet to the level of a plateau, out of which the valley has been carved. It has been truly said that it is impossible to describe the charms of this "Happy Valley," so rich is its vegetation, and so delightfully is it watered by the Yumuri and tributary streams; so delicious even on the hottest summer days is its atmosphere, tempered by the Atlantic breezes.

Rivers

Besides the Yumuri, Cuba is watered by numerous other streams, which generally flow through deep limestone canyons in independent channels to both coasts. But the catchment basins are narrow, and although some send down a considerable volume of opalescent water, scarcely any are navigable even for small river craft more than a few miles above their mouths. The largest is the *Cauto*, which winds for about 150 miles through the great plain to which it gives its name, and reaches the coast at the head of the inlet formed by the Cape Cruz promontory. It is accessible to boats for a distance of about 90 miles, but shallow bars have been formed at its mouth.

Several of the southern rivers fail to reach the sea directly, but run out in extensive *cienagas* or morasses, such as that of *Zapata*, which has an area of 600 square miles, and extends for a space of 60 miles between the *Broa* and *Cochinos* inlets. Others disappear in large limestone caves, and flow for miles in underground channels, so that, as in Yucatan and other limestone regions, a great part of the drainage is subterranean.

There are no extensive lacustrine basins, the largest being *Lake Ariguanabo*, which has an area of scarcely six square miles, and is drained by the *Rio San Antonio*,

which disappears beneath a large ceiba-tree some 20 miles south of Havana.

Climate

Despite its low latitude (23°-20° N.) and the warm waters of the encircling Gulf Stream, Cuba enjoys a remarkably salubrious and equable climate, the high mortality of the large towns before the American occupation being due, not to the tropical heats, but to their wretched sanitary condition. The vigorous measures taken to cleanse these "Augean stables" have already effected a marked improvement in the general sanitation, and are rapidly mitigating the virulence of the fevers hitherto endemic in the capital and other coast towns. That the island is quite suited for European settlement is amply proved by the robust constitution and fecundity of its Creole inhabitants, who are all of pure Spanish descent.

From the few meteorological observations that have been taken at Havana and elsewhere it appears that the normal temperature both on the sea-board, and especially in the interior, is considerably lower, and is confined to much narrower extremes than in the higher latitudes of the North American Union. At Havana the glass fluctuates in summer between 76° and 82° F., the highest record for ten years being 100°, or four degrees less than at Washington. In winter the range lies between 50° and 78°, the average for the whole year being about 76° or 77° on the north coast, and 80° at Santiago on the south side. In the interior it is considerably lower, falling to 73° or 74° even at slight elevations of 200 or 300 feet above sea-level, and to 70° or less on the uplands. Altogether the winter climate

is delightful—in fact, almost ideal, and the summer much less oppressive than in most parts of the United States.

The prevailing winds are the cool *nortes* ("northers") from November to February, and the easterly trades during the rest of the year. These occasionally acquire the force of hurricanes, as in 1846, when over 300 vessels were wrecked and nearly 2000 houses levelled in Havana, and in 1896, when the banana groves were destroyed in the eastern districts. With the easterly monsoons also comes most of the moisture, so that in the wet season from May to October the rainfall exceeds 32 inches at Havana, but is less than 20 during the comparatively dry winter months from November to April. Snow is almost an unknown phenomenon, although on the uplands thin films of ice are occasionally formed during the prevalence of the nortes.

Flora—Tobacco Plantations

Characteristic of the Cuban flora is the great variety and abundance of the palm family. Conspicuous amongst the twenty-six species is the superb royal palm (*Oreodoxa regia*), which is met everywhere, and is both ornamental and of great economic value. Like some of the allied Brazilian forms, every part of it is turned to some useful purpose. The roots are medicinal, the close-grained stem is serviceable for planks and boards, the buds of the central spires are edible, while the fibrous leaves make water-tight pails and even cooking vessels. In strange contrast with the cactus growths of the arid eastern slopes are the extensive pine forests, which lend a northern aspect to the western districts, and range into

the neighbouring insular dependency, from them named the "Isle of Pines."

When we consider the great quantities of sugar and tobacco extracted from the soil in peaceful times, it seems surprising to read that at no period much more than 4500 square miles, or about one-tenth of the total

CUBAN FARMER USING STICK PLOUGH.

area, has ever been under cultivation. Upwards of 3000 square miles are still entirely unreclaimed, 2000 are covered with forests, and many of the upland valleys, mountain slopes, and swampy coast-lands must always remain unproductive, while extensive tracts in the interior have not yet been surveyed.

The "vegas," or tobacco plantations, are grouped

chiefly in the Vuelto Abajo, south of the Sierra de los Organos, where the best qualities are grown on the extensive level plain watered by the Rio Cuyaguatejo. The plots are generally of small size, and about half the space is planted with banana-trees, which give good returns, and at the same time afford a grateful shade to the tobacco plant. The upper leaves are always the most choice, being of a uniform dark brown colour, free from spots, and burning freely with a brown or whitish ash, which will adhere to the cigar till it is half consumed.

The cigar itself is an invention of the Cuban aborigines, and was by them called *tabacos*, a term afterwards extended to the herb itself, the true name of which is *cohiba*. Hence the expression "Fabrica de tabacos" on the Havana cigar boxes really means, not "tobacco manufactory," but "cigar manufactory." Of these there are over a hundred in Havana alone, some employing as many as 600 hands, and turning out from twelve to sixeen million cigars in a single year. In 1893 134,210,000 cigars, besides 6,160,000 pounds of leaf, were exported, the leaf being in bales of 110 pounds, worth on an average about £4 per bale, while the very finest qualities have brought as much as £80 per bale. Even in 1896, while civil strife was raging, the exports were 186,000,000 cigars, 48,000,000 packets of cigarettes, and 16,823,000 pounds of leaf. But these figures have now merely an historic interest, and will probably be dwarfed under a settled and more enlightened administration.

Sugar and Coffee Culture

In 1897 the sugar industry, by far the most important in ordinary times, was nearly ruined by incendiarism,

and the crop, which in 1894 had exceeded 1,000,000 tons, fell to a little over 212,000 tons. It is noteworthy that in normal times the Cuban growers have been able to compete successfully with the European bounty-fed beet-sugar, which has paralysed the industry in so many other West Indian islands. This is due partly to the excellent quality of the cane, and the more favourable properties of the soil, but largely also to the energy and intelligence of the Cuban planters, who have introduced the very best crushing machinery, and taken other wise measures to grapple with the problem. The Cuban Creoles, it must always be remembered, are thoroughly acclimatised whites, while the immense majority of the people in most of the other islands are either full-blooded Negroes or Mulatoes reverting to the Negro type.

The *cafetelas*, or "coffee plantations," were formerly the most extensive in the island, but have long been superseded by sugar culture. On the few that still remain the owners also raise other produce, such as pisang (plantains), bananas, rice, cacao, and all manner of fruits, such as coco-nuts, oranges, citrons, and pine-apples. Agriculture and stock-breeding have also acquired some development, and in 1892 the live stock comprised 2,500,000 horned cattle, 80,000 sheep, 570,000 pigs, and 584,000 horses and mules.

Mineral Resources

Although not comparable to those of the mainland, the mineral stores of the island are far from inconsiderable. They occur chiefly in the eastern district of Santiago, where 296 mining titles were issued in 1891, including manganese, copper, coal, asphalt, and iron. About 500,000 tons of rich iron ores were annually

shipped to the United States before the occupation, and the output appears to have since greatly increased. Very productive manganese beds are worked near Ponupo in the Sierra Maestra, and have yielded as much as 200 tons per day.

Copper is widely disseminated, and the Cobre mines, about 30 miles north of Santiago, were at one time the greatest copper producers in the world. Here mining operations were carried on from 1524 to 1867, and the old shafts may still be seen descending to a depth of 700 feet. Between 1828 and 1840 ores to the value of about £500,000 were yearly shipped to the United States; but the mines are now flooded and abandoned. Both gold and silver occur, but apparently not in paying quantities.

Inhabitants—The Aborigines—The Negroes

At the time of the discovery Cuba is known to have been fairly well peopled by thirty distinct tribes, whose names and territories have been carefully preserved by the early writers. The *Cibunys*, as they were collectively called, were, like the Lucayans of the neighbouring Bahama Archipelago, a branch of the widely-diffused Arawak race. They occupied the whole island except a small tract at its western extremity, which was held by the fierce *Guanahacabibes* of Carib stock and speech. But all alike, estimated at about one million, had disappeared long before the close of the sixteenth century, victims of the dire oppression and cruelty of the first European planters. When all were gone they had to be replaced by other aborigines brought by the slave raiders from the surrounding mainlands and islands.

These in their turn were supplanted by West African

Negroes, who, being of more robust frames, and being also reinforced by a continued stream of fresh arrivals during the black period of the inter-continental slave trade, have persisted, and now constitute a main section of the population. In 1894 the coloured element—full-blood Africans, and various transitional shades—was estimated at 540,000, all the rest (1,100,000) being whites, with a few Asiatics (Chinese).

The Cubans

Except a small percentage of Spaniards by birth, who are diminishing since the American occupation, nearly all the whites are of tolerably pure Spanish descent. As already stated, they are thoroughly acclimatised, and this well-established fact is often appealed to as perhaps the most convincing proof that, under favourable conditions, Europeans can found families and perpetuate their race in lands lying well within the tropics. Often spoken of as "Creoles," a term which gives rise to much misunderstanding, they call themselves *Cubans* in a pre-eminent sense, and rightly consider that they represent the true Cuban nationality of the future.

They will doubtless have to grapple with the black problem, the solution of which will apparently not be found, as in Brazil, in a gradual process of miscegenation. Since the emancipation, the two elements, for reasons that have been elsewhere explained (vol. i. *South America*, chap. iii.), are no longer convergent, but divergent, each tending to preserve or revert to its own physical type. But, on the other hand, the Cuban vitality is too strong to fear absorption, through political ties, in that of the Anglo-American Union, especially where racial instincts are further strengthened by different religions and

languages, and by a somewhat isolated geographical position. At the same time, the antagonistic relations would necessarily become less acute were economic developments to attract a large stream of American settlers to this pleasant and naturally salubrious Antillean island.

American observers are as a rule favourably impressed by the social qualities, the brightness and intelligence of the Cuban people, and more especially by the unaffected courtesy and high moral tone of the Cuban women. "The higher classes," writes Mr. Hill, "are gentlemen of education and refinement. . . . The Cubans, under the influence of these surroundings, have developed into a gentle, industrious, and normally peaceable race, not to be judged by the combativeness which they have developed under a tyranny such as has never been imposed upon any other people. While the local customs, habits, and religion of these people are entirely different from ours, they have strong traits of civilised character, including honesty, family attachment, hospitality, and politeness of address. Even the peasantry have a kindliness and courtesy of manner that might put to blush the boorish manners of some of our own people. The Cuban woman is a very fascinating creature. She is elegant, walks gracefully, has pretty features, beautiful eyes and hair, and fine teeth. Coquettish as a young girl, she is generally both devoted and blameless as a wife and mother" (*op. cit.* p. 102).

Topography

Havana (*Habana*, or more fully *San Cristobal de la Habana*) lies on the north-west coast, not far from the Florida Channel, on a level tongue of land, which

stretches eastwards from the bay, and leaves open a navigable entrance 1400 yards long by 330 wide. On a low hill to the left stand the forts of *El Morro* and *Cabaños*, erected in 1589, and on the point of the tongue to the right is the battery of *La Punta*. On the same side of the magnificent bay the wharves, with their long

HAVANA.

Underwood Photo.

lines of shipping, extend all the way from the castle of *La Fueza*, the oldest fort in the place, to the *Maria*, or *Caballeria* barracks. On the opposite side stands *La Casa Blanca*, another fort with white walls, and farther on the suburb of *Regla*, with its immense sugar warehouses —imposing structures, whose iron-plated roofs glitter a long way off in the sunshine. The Caballeria, which fronts the bay, is also provided with an iron roof supported by iron pillars running along its entire length,

and here the commercial world gathers every morning for the transaction of general business.

In many respects Havana, with its 200,000 inhabitants, resembles a large European city. It consists of the old town in the east, and the new town in the west, the extremely narrow and badly-paved streets of the former being densely thronged, especially in the forenoon. Here the Obispo and other leading thoroughfares are lined with elegant shops, while the "west end" is pervaded by a profound aristocratic stillness. In this quarter are situated the most frequented promenades, the finest private houses, magazines, cafés, theatres, and casinos. Here also is the *Paseo de Isabel*, a sort of boulevard which crosses the city from end to end, is flanked by fine mansions, and laid out with a double row of spacious carriage-ways with magnificent fountains, statues, and flower-beds. A continuation of this noble thoroughfare is formed by the *Paseo de Taçon*, which is laid out in the same way, and leads to the Botanical Gardens and other public grounds.

Most of the houses are solidly built, rarely with more than one storey, and usually with enormous windows, which, instead of glazed sashes, are provided with bright-painted open iron gratings. The number of hackney coaches and private equipages is remarkable, the former being still estimated at some thousands, despite the competition of the lately introduced tramways. The señoritas generally drove about in their "volantes," open carriages with wheels of great size but light build, and immense shafts. The "calesero," or driver, sat like a postillion on horseback, dressed in a bright red gold-bespangled livery, while the trappings and silver-mounted harness glitter gaily in the sun. But these volantes have now disappeared, and as ladies are never

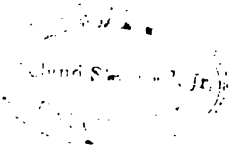
seen walking or shopping alone, Havana has been described as a city without women, all noise and smells. Since the advent of the Americans a great improvement has already been effected in the last-mentioned respect, and the two sexes have also begun to mingle more freely together in public.

Amongst the public buildings, none of which are remarkable for their architectural features, the most notable are the Taçon Theatre, one of the largest in the world; the Cathedral of La Merced, where the remains of Columbus were supposed to have rested till recently removed to Spain; the University, and the large Jesuit College of Belen, now containing an observatory, museum, and library; the Casa de Beneficencia, founded by Las Casas, and several other asylums and hospitals.

Some sixty miles east of Havana lies the busy seaport of *Matanzas*, which dates from 1693, and has long been the chief outlet for the sugar plantations of the fertile central districts. Unfortunately the large and commodious harbour has been neglected, and is now so filled with silt that large vessels have to load in the roadstead. It is a fine, well-built city, said to be naturally the healthiest in Cuba, and, with proper drainage, would be quite free from yellow fever and malaria. Amongst the local industries are sugar-refining, rum-distilling, railway works, and the preparation of guava jelly. Between the years 1892 and 1896 sugar and molasses were shipped at this port to the value of £12,000,000, chiefly for the United States.

Another important sugar-exporting place is *Cardenas*, which is quite a new seaport, formed in 1828 on a spacious bay under a long sheltering headland, and is connected by rail with Matanzas, Havana, Santa Clara, and Cienfuegos,

N.
HAVANA
SCALE OF ENGLISH MILES
0 ¼ ½ ¾ 1 1½ 2
Railways
Tramways
Punta del Tejonal
Lighthouse
Fte el Morro
Fte Cabaños
Fte Casa Blanca
Fte S. Diego
La Punta Battery
Sta Clara Battery
Baths
Prison
Cathedral
CASA BLANCA
Hospital de S. Lazaro
Casa de Beneficencia
PRADO
La Fuerza
TACON
Bay of Merimelena
Store Houses
Jardin Botanico
CAVALRY BARRACKS
Coll. of Belen
ALTILLERY BARRACKS
Castillo de Principe
ARSENAL
Military Hospital
Cayo Cruz
Fruit Store Ko.
REGLA
Castillo de Atares
HORCON
Rio del Lagunas
Bay of Guasabacoa
CERRO
JESUS DEL MONTE



and by regular steamers with all the coast towns. But although well laid out, and boasting of a relatively cool climate, its only attractions are sugar and molasses.

The same remark applies to *Sagua la Grande*, which lies on the river of like name, 25 miles from its mouth, 200 miles east of the capital. Sagua is the present terminus in this direction of the Havana Coast Railway, and also of another line which runs from this point across the island to *Cienfuegos* on the south coast. Like Cardenas, Cienfuegos is a new place founded in 1819 by some refugees from Hispaniola on a magnificent landlocked inlet, six square leagues in extent, and justly described as one of the finest havens in the world. This flourishing little city of 24,000 souls is regarded as the metropolis of Central Cuba, and has long been the chief outlet for the sugar of the southern districts. In the vicinity are some of the largest plantations in the world. *Trinidad*, farther east, was settled by Diego Velasquez in 1513, and is one of the earliest fortified towns in the New World. Here was the scene of many a fierce combat with the buccaneers, against whose sudden attacks watch was kept from the crest of a neighbouring hill 900 feet high, in those unruly times familiarly known as *La Vigia*, the "Lookout."

East of Trinidad follow several large inland towns, such as *Santa Clara*, now called *Villa Clara*, *Remedios*, *Esperanza*, *Puerto Principe*, and *Holguin*. Puerto Principe, locally called *Camaguey*, claims to be the chief centre of population in the interior, and also the most patriotic city in the island. Hence the term "Camagueynos" has almost become synonymous with the very best and most valiant of the Creole natives. Camaguey lies on a plain about midway between the two coasts, and is connected by rail with *Nuevitas* to the north-east.

On the south coast the only noteworthy places east of Trinidad are *Manzanillo*, the outlet of the fertile Cauto Valley, and *Santiago de Cuba*, capital of the eastern section of the island, and second only to Havana in strategic and political importance. Santiago was the theatre of some memorable events during the Spanish-American war of 1898. Hostilities were soon brought to a close after its capture, following on the destruction of the Spanish fleet after a desperate attempt to escape from the harbour where it had been "bottled up" and entrapped by the United States squadron.

The bay forming the harbour is a magnificent pouch-shaped inlet six miles long, so completely land-locked that its narrow neck is scarcely visible from the sea. Little is seen by passing vessels except the straight coast-line of lofty mountains forming, apparently, a continuous rocky wall between Capes Maysi and Cruz. But by means of a powerful glass a narrow rift may be detected at a point about 100 miles west of the eastern extremity of the island, and here is the deep channel, less than 200 feet wide, that gives access to the bay. The advantages of this admirable position did not escape the eye of Diego Velasquez, who, after founding the first capital at *Baracoa*, removed the seat of government to Santiago in 1514. *Morro Castle*, often mentioned during the late siege operations, stands on the east point of the entrance, where its ivy-clad ramparts and crowning battlements present an attractive picture to the artist, but have no terrors for modern battleships.

On a declivity six miles from the north-east head of the bay stands the city of Santiago, which also produces a pleasing effect at a distance, with its quaint Moorish architecture, low red-roofed houses, spacious verandahs, and gardens gay with a wealth of bright tropical flowers.

But in the interior there was more to repel than to attract before the American occupation, followed by the sanitary measures which have already effected a great change for the better. Santiago is the chief centre of

Underwood Photo.

MORRO CASTLE, CUBA.

the mining interests, and also carries on a considerable export trade in tobacco, cedar, mahogany, hides, wax, and other raw materials. "In the future development of Cuba, as in the past, it will always be of more or less importance owing to its strategic position near the

Windward Passage. Under a stable government the adjacent mountains will become the seat of extensive coffee and fruit production" (Hill, *op. cit.* p. 130).

Baracoa, on the bay of like name facing the southern Bahamas, dates from the year 1514, and is consequently one of the oldest continuous settlements in Spanish America. It was founded by Diego Columbus, son of the discoverer, and visitors are still shown the ruins of his house. Here also began the last revolt against Spain in 1895, when Antonio Maceo landed at this place with a handful of followers, and within a year made his way across the whole length of the island, which was at that time occupied by over 200,000 Spanish troops.

Puerto Rico: Extent—Population

Puerto Rico, which was ceded in 1898 to the United States by Spain without reservation (see above), is the smallest, but relatively by far the most densely peopled, of the Greater Antilles. With an area of only 3668 square miles, or scarcely one-twelfth that of Cuba, it has a population of 806,000, or 220 to the square mile, that is, proportionately, five times more than that of the larger island. Under the Spanish rule this population was distributed, in 1895, over the seven administrative departments as under:—

Departments.	Pop.	Chief Towns.	Pop.
Bayamon	131,000	San Juan	28,000
Arecibo	125,000	Arecibo	30,000
Aguadilla	87,000	Aguadilla	16,000
Ponce	160,000	Ponce	43,000
Guayama	100,000	Guayama	14,000
Humacao	90,000	Humacao	15,000
Mayaguez	116,000	Mayaguez	28,000

The Surrounding Waters—Brownson Deep

Puerto Rico lies about 1000 miles to the east of the capital of Cuba, with which island it at one time formed continuous land through Hispaniola. The partly submerged bank, above which it rises to a mean altitude of about 1600 feet, plunges on the north side into a tremendous abyss where the plummet has measured nearly 30,000 feet in the *Brownson Deep*. This was long supposed to be the profoundest oceanic chasm, until it was exceeded by several soundings in the Pacific, the deepest of which were those discovered in 1900 by the United States survey steamer *Nero*, which revealed abysses of 5160 and 5200 fathoms—six miles all but 66 feet—both near the island of Guam, largest of the Ladrones.

Configuration—General Relief

In striking contrast to the diversified contour-lines of Hispaniola and Cuba, Puerto Rico presents the outlines of a somewhat regular parallelogram extending 96 miles west and east, with a mean breadth of 36 miles. Its four sides face the four cardinal points, and are almost everywhere low and uniform, with no large inlets or prominent headlands, and destitute of keys or fringing reefs.

The interior forms a moderately elevated plateau, pleasantly diversified with an extraordinary number of perennial streams and rivulets—as many as 1300 have been enumerated—and traversed by several low wooded sierras, which culminate, towards the east, in the *Yunque* peak of the *Sierra Luquillo*.

Flora—Fauna

On their higher slopes these sierras are still clad with remnants of the primeval forests which formerly covered

the whole island, but are now mostly replaced by the coffee shrub, sugar-cane, tobacco, and other plants of economic value. Conspicuous amongst the forest growths are a magnificent tillandsia with very large fragrant flowers and silvery leaves; the *Cocoloba macrophylla*, with enormous purple spikes over three feet long; several species of palms and tree-ferns; a tall lobelia; ebony, cedars, and the non-odorous West Indian sandal-wood. The indigenous flora also includes about thirty medicinal plants, and many others yielding resins and edible fruits, or else useful for dyeing, tanning, cabinet work, and building purposes. Corresponding with the character of the soil and the general distribution of moisture—much more abundant on the uplands and northern slopes than on the Caribbean sea-board—the island presents two strongly-marked and contrasting zones of vegetation. "One includes the whole of the mountains and north coast, described as a region of great humidity, high altitudes and stiff clay soils, where the general growth consists of deciduous trees of many species; the other is the foothill country of the south coast, a region of dry calcareous soils, seasonal aridity, and low altitude, where the flora is largely of the type of low, scrubby, thorny, leguminous, and acacia-like trees."[1]

On the other hand the indigenous fauna is very poor, especially in mammals, which are represented only by a solitary species of agouti. The island is also said to be free from noxious reptiles and even insects, while it abounds in birds and fresh-water fishes. But the most characteristic animal is a huge land tortoise, which is closely allied to those of the Galapagos and Marcarentias Islands, and to the fossil species occurring in Barbuda and Sombrero.

[1] *Jour. R. Geograph. Soc.*, March 1900, p. 284.

Minerals—Climate

The prevailing formations are fossiliferous limestones of the Tertiary period, generally overlying conglomerates and metamorphic rocks like those of the neighbouring

Underwood Photo.

ADJUNTAS, PUERTO RICO.

Virgin Islands and of the Blue Mountains in Jamaica. Minerals, including gold, quicksilver, iron, molybdena, manganite, garnets, agates, and fine crystals of quartz, occur in great variety, but apparently nowhere in large quantities, although gold, found in placer deposits, was mined by the early Spanish settlers.

Despite a somewhat high normal temperature of 78° or 80° F. with a range of from 57° to 100°, Puerto Rico is said to enjoy a more salubrious and agreeable climate than any of the other Antilles. Yet liver complaints, dysentery, and fevers of all sorts are prevalent, especially on the northern slopes, where the yearly rainfall often exceeds 60 inches. The southern districts are much drier and healthier, but are equally exposed to those terrific cyclones by which the whole island is occasionally wasted (see above).

Inhabitants: Aborigines—Negroes—Whites

Discovered by Columbus in 1493, and conquered by Ponce de Leon in 1508, Puerto Rico was almost entirely neglected by Spain, or used only as a penal settlement, till the beginning of the nineteenth century. Thanks to this neglect, the aborigines, all of Arawak stock, escaped the fate of the kindred peoples in the other Antilles, where nearly all had disappeared before the close of the sixteenth century. But the turn of the Puerto Rican natives came in 1811, when most of them perished in a revolt against Spanish rule, the few survivors being distributed as slaves amongst the white settlers.

As elsewhere in the Antilles, these aborigines were replaced by Negroes, who were imported from West Africa, and at present bear somewhat the same relation in Puerto Rico that they do in Cuba to the European element. From the subjoined table it appears that while foreigners are a mere fraction of the population, the whites of Spanish descent greatly outnumber both the full-blood blacks and the Mulatoes collectively:—

Whites of Spanish stock	483,000
Anglo-Americans and other Whites . . .	5,750
Full-blood Negroes	78,700
Coloured (Mulatoes of all shades) . . .	238,690
Total . .	806,140

The Puerto Rican Creoles form two distinct social classes: 1. The "Spaniards," as they call themselves in an exclusive sense—descendants of the military, who garrisoned the island during the long period that it was held merely as a penal settlement; 2. The *Gibaros*—small freehold farmers, mostly from Andalusia. The Spaniards, who regard themselves as the aristocrats of the community, constitute the professional, trading, and planter sections, while the Gibaros are essentially a rustic people, resembling the Irish peasants in many of their good qualities and shortcomings. Colonel Flinter, historian of the island, tells us that they are noted for their reckless hospitality, thriftlessness, and indolence, swinging themselves in their hammocks all day long, smoking their cigars, and thrumming a guitar, while the plantain grove surrounding their homesteads, and the coffee shrubs flourishing almost without cultivation, afford them a frugal but sufficient sustenance.

But, on the other hand, Mr. Hill has well remarked that the spread of these tropical farmers, with their 20,000 freehold plots dotted thickly over the island, has so far prevented the soil from falling into the hands of the sugar monopolists. It furnishes at the same time "a sufficient answer to those who imagine that a European race, living by its own labour, cannot exist where 80° is the average height of Fahrenheit's thermometer. With the gradual diffusion of education, of which there is a lamentable deficiency, much of the grosser part of the character of the peasantry may be progressively removed" (*Op. cit.* p. 168).

Material and Social Progress

The prosperity of Puerto Rico, as attested both by its dense population and general material progress, dates from the year 1815, when a decree was issued transforming the island from a convict station to a colony in the strict sense of the term. Every encouragement was given to free local industries, and settlers were invited to take possession of the land on most liberal terms. They were granted free holdings, exempted from direct taxes, and even from the tithes and export duties for a certain number of years.

In 1870 Puerto Rico ceased even to be a colony, and became a province of Spain, with all the rights and privileges of the home departments, with representation in the Cortes by universal suffrage. Then followed in 1873 the emancipation of the slaves, who had always been treated with great humanity, and now remained as freedmen in the employment of their former masters. The planters were thus able to continue their agricultural operations without the financial ruin and social disorganisation in which so many other islands of the Antilles were involved.

Despite the competition of the bounty-fed beet-sugar, Puerto Rico still forwards large quantities of cane-sugar —54,000 tons, valued at £704,000, besides 15,000 tons of molasses in 1898. In the same year coffee, at present the chief product of the island, was exported to the value of £2,509,000, while tobacco fell short of £90,000.

Topography

Before the middle of the eighteenth century there were very few urban groups in Puerto Rico, the people

dwelling for the most part in rude hovels and scattered hamlets, and gathering only on feast-days at open-air meetings in some central point of the parish. But since then more than half of the inhabitants have grouped themselves in large villages and towns, which are relatively more numerous in Puerto Rico than in any other part of Spanish America. Besides the capital, San Juan, on the north side, and the large seaports of Ponce and Mayaguez on the south and west coasts, there are upwards of fifty places, with populations ranging from 6000 to 30,000. Several of these towns are connected by short railways aggregating 140 miles in 1898, besides 170 under construction. This is exclusive of 120 miles completed in 1892 of a line 283 miles long, which is eventually to encircle the island, and afford railway communication to all the large urban and rural districts.

San Juan Bautista de Puerto Rico, commonly called *San Juan* or *Puerto Rico*, is the oldest place in the island, dating from the year 1511, when it was founded near the east end of the north coast on an islet since connected with the mainland by the bridge of *San Antonio*. The harbour, approached by a narrow channel navigable for large vessels, is the best in the island, being formed by a spacious landlocked bay with a good depth of water lately increased by dredging. The old town, enclosed by picturesque ramparts, and defended by *Morro Castle* and other stout fortresses, is laid out in regular squares with well-kept streets, several of which are lined with shady trees, and flanked by some fine structures, such as the Casa Blanca, the theatre, *aduana* (custom-house), the cathedral, and several other churches. Of the population, estimated at 30,000, about one-half are blacks or coloured, and these are so crowded together

that the mortality was always high before the sanitary measures and other improvements introduced by the American administration.

From San Juan a fine road 90 miles long runs

Underwood Photo.

SAN JUAN, PUERTO RICO.

diagonally across the island to *Ponce*, the largest place on the south coast. Thanks to a constant supply of good water, Ponce is one of the healthiest places in the island, and the neighbouring port of *Playa* is accessible to vessels drawing 25 feet. The only other important

seaport is *Mayaguez*, which was founded in 1752, on the west side, facing *Mona Passage*. This channel takes its name from the islet of *Mona*, which lies nearly midway between Puerto Rico and Hispaniola, but is a dependency of the former, and thus secures to the United States the complete command of the broad opening which here gives access to the Caribbean Sea. Westwards Mona terminates in a bold headland crowned by an overhanging boulder, which seems about to topple over, hence is known by the name of *Caigo-o-no-Caigo*, "Shall-I-fall-or-not?"

Some 12 miles off the east coast are two other rocky dependencies of Puerto Rico (*Vieques* and *Culebra*) which appear to be fragments of the now submerged range formerly terminating in the Virgin group. Vieques, called also *Crab Island*, is 20 miles long by 6 broad, and has a population of 6000 farmers, mostly stock-breeders and sugar-growers.

CHAPTER XVII

HISPANIOLA: SAN DOMINGO AND HAITI

Terminology—Extent—Population—Material and Social Contrasts—A Century of Black Rule—Samana Bay—American Enterprise—General Relief—The Cibao Highlands—Scenery—Monte Cristi Range—Lakes and Rivers—Climate—Flora—Vegetable and Mineral Resources—Inhabitants—The Aborigines—Whites and Blacks of San Domingo and Haiti—Revolt of the Slaves—Civil Strife—Expulsion of the French—Period of Independence—Historic Summary—Social Condition of the Blacks—Vaudoux Rites—Topography—Administration of San Domingo—Administration of Haiti.

Terminology—Extent—Population

ALMOST since its discovery by Columbus in December 1492 this great Antillean land, second only to Cuba in extent, has lacked a generally accepted designation. The expressive native name *Hayti* (*Haiti*), that is, "Highlands," was at first superseded by *Española* (Latinised to *Hispaniola*), "Little Spain," which was given to it by the discoverer, but soon yielded to *Santo Domingo*, later *San Domingo*,[1] the name of the first settlement, which was at an early date extended to the whole island. But confusion, which still persists,

[1] In correct Spanish usage the full form *Santo* is reserved for St. Domenick, founder of the Order of Preachers, though this distinction between *Santo* and *San* appears in recent times to have fallen somewhat into abeyance.

arose in 1677, when Spain ceded the western section to France, thereby creating two distinct political domains, neither of which could properly any longer lay claim to any of the names hitherto applied to the whole region. The difficulty, however, was practically overcome when *San Domingo* was reserved for the eastern, and *Haiti* revived for the western of the two independent states, which were established by the plantation Negroes after the expulsion of their Spanish and French masters early in the nineteenth century. Still the island, as a whole, remained without a much-needed general name, and this inconvenience is here met by reviving the never quite obsolete HISPANIOLA in the sense used by Columbus.

Hispaniola, which is limited west and east by the Windward and Mona Passages, presents the rough outlines of a swimming frog, with its head turned towards Puerto Rico, and its hind-legs trailing westwards in the direction of Cuba and Jamaica. From the extremity of the longer southern leg (Tuberon Peninsula) to the mouth in Mona Passage there is a west-east stretch of no less than 400 miles, with an extreme breadth of 160 miles, a contour-line of about 1000 miles, a total area of over 28,000 square miles, and a population roughly estimated at 1,660,000.

In the absence of any official returns, the estimates of the black, coloured, and white sections, and even of the collective populations of the two States, differ considerably, and must be regarded in all cases as purely approximate. It is generally assumed that in Haiti the blacks (full-blood Negroes) form nine-tenths, the coloured (Mulatoes) nearly one-tenth, and the whites a mere fraction of the inhabitants. In San Domingo, on the contrary, the whites, having never been exterminated, are still comparatively numerous, while the black and

NATIVE HUT ON THE WAY TO SAN DOMINGO.

coloured elements are more evenly balanced than in the neighbouring republic. But no trustworthy statistics are yet available to determine the relative proportions of the various sections of the population, which is distributed amongst the several administrative divisions of the two States approximately as under:—

SAN DOMINGO

Provinces.	Pop.	Chief Towns.	Pop.
Azua	50,000	Azua	14,000
San Domingo	134,000	San Domingo	25,000
Seibo	56,000	Seibo	12,000
Vega	132,000	Vega	11,000
Santiago	40,000	Santiago	32,000
Barahona	20,000	Barahona	5,000
San Pedro	40,000	San Pedro	7,000
Samana	18,000	Santa Barbara	5,000
Puerto Plata	40,000	Puerto Plata	15,000
Monte Cristi	40,000	Monte Cristi	1,500

HAITI

Departments.	Pop.	Chief Towns.	Pop.
Nord	250,000	Cap-Haitien	30,000
Nord-Ouest	70,000	Mole Saint-Nicolas	12,000
Artibonite	125,000	Saint-Marc	20,000
Ouest	350,000	Port-au-Prince (capital)	50,000
Sud	200,000	Les Cayes	25,000

Material and Social Contrasts—A Century of Black Rule

Lying midway between Cuba and Puerto Rico, Hispaniola is at once the most central and the loftiest link in the now partly submerged Great Antillean chain. In these respects it stands out with a distinct individuality of its own, greatly exceeding all other members of the system not only in altitude, but also in the diversity of its coast-lines and general relief, as well as in the romantic character of its mountain ranges, the beauty

and fertility of the intervening plains and fluvial valleys. Surveyed from the summit of the *Cerro Santo*, the great northern depression between the coast range and the central uplands presented such a superb prospect to the wondering eyes of Columbus that he named it the *Vega Real* ("Royal Plain"), at the same time declaring that the whole island surpassed the pearl of the Antilles itself in physical beauty.

Unfortunately all these natural advantages are largely neutralised by the fact that the whole island has for about a hundred years been exclusively held, both politically and socially, by somewhat degraded black and coloured peoples, mainly of Spanish speech in the eastern, and of French in the western division. The result is that, instead of being one of the most prosperous, Hispaniola has long been the most impoverished and backward of the Greater Antilles. Since the discovery "nearly every year of its history has been marked by some tumultuous event or political revolution. Nowhere on the face of the earth has there been presented such a rapid panorama of governmental changes. The French and Spanish supplanted each other, only to be driven from the island by the blacks and Mulatoes; since then many independent governments have been successfully set up amid constant strife and turmoil. It was the first land colonised in the New World by Europeans—where African slavery was first introduced, and where, strangely enough, emancipation was first proclaimed. The blood of its children has been lavishly poured upon its soil; yet to-day it rests upon the bosom of those tropic seas as beautiful and fruitful as when first discovered, awaiting only sound government to take its proper place in civilisation" (Hill, p. 237).

Samana Bay and American Enterprise

The contrast is very striking between the monotonous contour-lines of Puerto Rico and the extremely diversified coast-lands of Hispaniola. Here are developed several bold headlands, promontories, and peninsulas, which enclose the spacious *Gulf of Gonaives* on the west, *Manzanillo* and *Samana Bay* on the north, and *Ocoa Bay* on the south side.

The magnificent Samana inlet, the occupation of which by the United States seemed imminent some years ago, displays along its sheltered margin a tropical vegetation of marvellous splendour. It forms one of the finest harbours in the world, being 30 miles long, well protected from all winds, and deep enough to give access to the largest vessels through a narrow but not difficult channel. In 1873 the bay, together with the peninsula enclosing it on the north side, was actually purchased by an American company, which also secured the right to make its own laws, organise its own police, build a fleet, levy tolls, establish banks, issue paper money, and, in short, exercise all the functions of an independent government. It also obtained the right to buy lands, if needed, in other parts of San Domingo, and undertook to construct roads and telegraphs throughout the republic on mutually advantageous terms. A new era seemed to have dawned for the unfortunate island with the introduction of American enterprise on so magnificent a scale. But these glowing prospects were doomed to an early disappointment. The treaty signed by the President of the State in January 1873 was revoked the very next year on the failure of the company to pay a stipulated annual rent.

Samana, however, like most of the other inlets, is

largely encumbered by coralline reefs, which also fringe the outer shores of the Tiburon peninsula, parts of the north coast, and the eastern extremity of the island. But elsewhere the sea-board is mostly free from these obstructions, while all the large islands—*Gonaive* on the west, *Tortuga* on the north-west, *Saona* and *Yache* on the south coast—are evidently detached fragments of the mainland.

General Relief—The Cibao Highlands—Scenery

Hispaniola is essentially a mountainous region, where the steep escarpments approach almost everywhere close to the surrounding waters, and leave here and there only a few strips of beach or terraced reefs leading to the rugged uplands of the interior. Here it seems impossible to detect any order or system in the confused jumble of lofty crests, peaks, and ridges covering most of the surface, and running in various directions over the island. But a closer inspection resolves this apparent chaos into a number of tolerably distinct ranges, which almost completely isolate the habitable plains and river valleys, and have a normal east by south trend along the axial line of the Antillean uplift.

Taken as a whole, these ranges may be regarded as an extension of the uplands in the eastern parts of Cuba and Jamaica, which they resemble in their main outlines, and with which they were formerly connected by continuous land. The Hispaniola heights are in fact the culminating knot of the now broken orographic system, which formerly fell in a single ridge through Puerto Rico eastwards to the Virgin group, and ramified through the two western peninsulas to Cuba and Jamaica. The Cuban Sierra Maestra and the Jamaican Blue Mountains

thus converge eastwards in the *Sierra Cibao* ("Rocky Range"), which traverses the interior of Hispaniola in an oblique direction for nearly 400 miles from *Cape St. Nicolas* on the windward passage to *Engaño Point* facing Puerto Rico. In the eastern section the sierra contracts to a single ridge with a mean height of scarcely more than 1000 feet. But towards the centre of the island it broadens out and develops a number of secondary crests, where it is all the more difficult to trace the backbone of the system, since the loftiest peaks stand not on the axial line, but on some of the lateral ridges. Such especially is *Mount Tina* (10,300 feet), which is situated north-west of the city of San Domingo, and is the culminating peak of the Antillean highlands.

On the main range the highest summit appears to be the *Pico del Yaqui* (9700 feet). In the vicinity are several others from 7000 to 8000 feet and upwards, and hundreds of peaks falling little below 7000 feet follow along the main axis to the very extremity of the *Gonaive* and *St. Nicolas* (north-western) peninsulas. Here is the *Morne d'Or* (3960), the only eminence in the island which has been described as an extinct volcano, though its recent igneous character seems more than doubtful. In general the Cibao uplands consist of a great number of elevated crests and peaks, mainly very old platonic rocks, which are crowded close together, and crop out through the disturbed sedimentary formations—intensely folded sandstones, conglomerates, and the white limestones of marine origin so prevalent throughout the Greater Antilles.

The whole region is scarcely anywhere surpassed, at least for the astonishing diversity of its scenic effects. In close juxtaposition are found bare rugged crags shooting up 6000 or 7000 feet above yawning chasms, or

inaccessible rocky canyons, elsewhere gentler sloping heights clothed with pine or spruce forests up to 3000 or 4000 feet, above which leafy woodlands, matted together with trailing plants, are again succeeded by dense thickets of ferns which crown the crests winding away in all directions beyond the horizon. From the summit of the *Sillon de la Viuda*, the "Widow's Saddle" (5000 feet), the most frequented of the few passes connecting the northern and the southern districts, the enchanted eye is arrested at a thousand points, where the beauty of one vista seems to disappear beside a still more charming prospect, but all alike pleasant, picturesque, and majestic in their varied outlines. Here the glittering surface of the far off sea peeps out at intervals, contrasting with the azure tone of the distant heights, which in their turn delight the eye by the contrast with the fresh verdure of the nearer slopes. Rivers also mingle the charm of their meandering course with this enchanting picture, from which the traveller reluctantly tears himself to begin the next rugged ascent.

Monte Cristi Range

Northwards the Cibao uplands are completely separated by the Vega Real depression, probably at one time a marine channel, from the *Monte Cristi* coast range, which is named from the old settlement of Monte Cristi at its western extremity. The sierra, which presents its steepest escarpments towards the plain, and falls more irregularly seawards, extends from Manzanillo to Samana Bay, at a mean elevation of about 3000 feet, culminating in the *Loma Diego Campo* (3855 feet) towards the centre of the range.

Lakes and Rivers

Towards the south-west the Cibao highlands are also entirely severed from the rugged Tiburon heights—*Sierra de la Selle* (8900 feet), *La Hotte* Range (7400)—by an old marine passage, which extended all the way from Port-au-Prince to the *Bahia de Neyba*. Here the low depression now connecting the south-western peninsula with the mainland is still traversed by a lacustrine chain, whose fauna and brackish waters reveal its oceanic origin.

The *Laguna de Enriquillo* (*Étang Salé*), largest of the basins, stands about midway between the two seas, and is still inhabited by sharks and porpoises, although it has long been cut off from all communication with the neighbouring inlets. But during the floods it forms a continuous sheet of water with the *Laguna de Fundo* (*Étang Saumache*) towards the north-west, and then the united basin has a length of about 60 miles, and a mean width of 8 to 10, and is consequently larger than the Lake of Geneva. In the direction of Neyba Bay the lacustrine chain is continued by the much smaller lakes *Icotea de Limon*, which has no apparent outflow, and *Rincon*, which communicates indirectly with the sea through the delta of the *Rio Yaqui Chico* ("Little Yaqui").

This river, which descends from the Cibao uplands southwards to the Caribbean Sea, is so called in contradistinction to the *Great Yaqui*, which flows from the same heights northwards to the Vega Real, and then traverses that depression westwards to Manzanillo Bay. According to local usage this western section is called the valley of the Yaqui or *Santiago*, the expression "Vega Real" being restricted to the eastern section, that is, to the valley of the *Rio Yuni*. This river also rises on the uplands near the sources of the two Rios Yaqui

but on reaching the great northern depression bends round abruptly to the east, and follows this direction for the rest of its course through the Vega Real to the head of the Samana Bay inlet.

In their upper reaches all these streams present the aspect of wild mountain torrents during the rainy season, and are subject lower down to sudden freshets. Their mouths are also obstructed by shallow beds, so that they are at no time navigable except by light river craft. They are exceeded in length and volume only by the *Artibonite*, which has also its rise in the central water-parting, and after a winding course of 95 miles through San Domingan and Haiti territory falls into the Gulf of Gonaives at the Pointe Diable.

Climate

Owing to the great diversity of its relief—lofty ranges, secluded valleys, low-lying hill-encircled plains—Hispaniola presents a wider range of climatic conditions than any other part of the Antilles. During the rainy summer months, from April to October, oppressive heats prevail at Port-au-Prince, where the glass rises constantly to 94° or 96°, and often to over 100° F. at noon, and seldom falls much below 80° at night. Even in the dry winter season, from November to March, the normal temperature ranges from 70° to 80° on the lowlands, while the slopes from 1500 feet upwards enjoy a temperate and remarkably equable climate. But the uplands, which cover most of the surface, are generally too cool for the Negro constitution, and the greater part of the island must consequently remain uninhabited so long as white settlers are excluded or repelled by the political and social conditions.

Although the yearly rainfall is abundant, averaging perhaps over 120 inches, it is so irregularly distributed that some districts are almost comprised within the rainless zone, while in others the soil is supersaturated with moisture. In general the uplands above 2000 feet are constantly bathed in dense mists or heavy dews, which feed the numerous perennial streams, but for which some of the arid inland depressions would scarcely be inhabitable. In this respect the contrast is remarkable between the dry western and well-watered eastern section of the Vega Real. The latter is clothed with a varied and exuberant tropical vegetation, while the former is covered with scrubby and thorny growths—acacias, arborescent opuntias, and especially an endless variety of the cactus family.

Flora—Vegetable and Mineral Resources

In the central and eastern woodlands, which cover thousands of square miles, there is an immense untapped store of valuable species, such as rosewood, mahogany, satinwood, pines, cedars, oaks, and ironwood. All tropical fruits arrive at perfection; the coffee shrub has almost run wild, yielding heavy crops for little labour; and no other region is better suited for tobacco and sugar culture. The conditions are altogether so favourable for plantation work that during the French rule Haiti was regarded as the most valuable of all European colonies. It should, however, be noted that the enormous quantities of colonial produce obtained from the soil in those days was in great measure due to the merciless treatment of the black slaves by the French planters.

During the period of independence (1804-1900) the

economic conditions have undergone a profound change, generally in the direction of economic decay. In colonial times the yearly exports of Haiti alone appear to have averaged from £12,000,000 to £15,000,000, whereas those of the whole island barely exceeded £3,000,000 in 1897—£2,500,000 in Haiti, and £557,000 in San Domingo. The chief items in Haiti were: coffee (32,600 tons), cocoa (190 tons), and logwood (50,500 tons); in San Domingo: sugar (39,000 tons), tobacco (2680 tons), cocoa (19,000 tons), coffee (10,000 tons).

No mention is made of minerals, all mining operations having long been suspended. Yet several ores exist in considerable abundance, and gold as well as silver mines had been extensively worked in early times, when over $460,000 in gold were annually remitted to Spain. Reference is also made to the presence of copper, tin, platinum, manganese, and especially iron. An eminence in the Hatillo Maimon district, 100 feet high and from 300 to 400 broad, contains a huge mass of compact magnetic iron ore with 67 or 68 per cent of pure metal. On the other hand the coal, which had been reported near Samana Bay and elsewhere, has proved to be lignite of poor quality.

Inhabitants—The Aborigines

At the time of the discovery Hispaniola was found to be occupied by a considerable number of gentle and inoffensive aborigines grouped in five kingdoms, with a collective population estimated by Columbus at nearly one million, and by Las Casas at three millions. All appear to have belonged to the same widespread Arawak race as the Cuban Cibunys, and those of the western districts even bore this name, while closely-

related dialects of the same stock language were everywhere current in the island. Like the Cubans, they were exposed to the attacks of the cannibal Carib rovers, against whom they occasionally combined. But no combination could save them from the terrible white intruders, by whom all but a handful had been exterminated within fifty years of the discovery. The few survivors took refuge in the upland Boya district, about midway between the city of San Domingo and Samana Bay, and here they were left in peace under their chief, the "Cacique of Haiti Island," until they became gradually absorbed in the surrounding Hispano-African populations.

Whites and Blacks of San Domingo and Haiti

Some of the Africans had been introduced as early as the year 1505, and after the slave trade was legalised in 1517, about 4000 were annually imported to take the place of the aborigines in the mines and on the plantations. Later great numbers of the white settlers were drawn to the mainland by the superior attractions of Peru and Mexico, and for a time the whole island seemed to be abandoned to the black slaves, scarcely held in control by the few white officials who remained at their post.

Then the English and especially the French buccaneers appeared on the scene, and from their strongholds in Tortuga and other islands harassed the land during a great part of the seventeenth century. Permanent settlements were even formed at Port-au-Prince and several points on the western peninsulas, where the ground was cleared for plantations, and Negro slaves introduced from the Antilles.

Thus it was that the western districts—the present HAITI—passed into the hands of the French, whose territorial rights or claims were formally acknowledged by Spain in the year 1697. Thus was established the dual dominion, which lasted throughout the eighteenth century, during which the Spanish section (SAN DOMINGO) languished under an effete administration, while Haiti, in the hands of the vigorous French settlers, became one of the most flourishing colonies beyond the seas, supplying Europe with a great part of its colonial produce, such as cotton, sugar, tobacco, and indigo.

Revolt of the Slaves—Civil Strife

But its prosperity was purely material; there had been no social or moral progress at all, and the great upheaval born of the French Revolution found the community divided into several hostile sections with antagonistic interests, and without any common ground on which a reconciliation might be brought about. There were about 30,000 white slave-owners and officials, the privileged ruling class, some royalists and upholders of the old régime, others inspired by the new ideas, proclaiming the brotherhood of mankind, and advocating the emancipation of the slaves. Before their liberation these numbered over 500,000, most of whom, at least at first, sided with the royalists, calling themselves "Gens du Roi," and aiming at nothing more than equality with the French planters, and a share in the land which they had hitherto cultivated for them. They were generally full-blood Negroes, quite distinct from the intermediate class of Mulatoes, who were nearly all freedmen, but numbered scarcely more than 28,000.

Instead of helping to soften the antagonism of the

two extremes, these half-breeds hated and were hated by blacks and whites alike, the object of many being to oust the latter and take their place as the privileged slave-owning class. Others again aspired merely to political and social equality, in common with the "petits blancs," that is, the generally despised European bourgeois class, who in their turn despised both blacks and Mulatoes. Such were the combustible materials which burst into flames in 1791, when the National Assembly conferred a limited franchise on the half-breeds born of free parents. The standard of revolt was at once raised by the royalists, who transferred their allegiance to Great Britain, and induced the English of Jamaica to take possession of Port-au-Prince, the arsenal of St. Nicolas, and some other strategical points.

The Spaniards also, as representing the Bourbon dynasty, had invaded Haitian territory, and the colony seemed lost to France, when a reaction was caused by the edict of the commissioner, Sonthonax, abolishing slavery, followed in 1794 by the decree of the National Assembly proclaiming the absolute equality of all citizens, irrespective of race or colour. Thereupon the Gens du Roi deserted the royalist cause; the war between blacks and whites assumed a character of extreme ferocity; no quarter was given on either side; all captives were butchered and even tortured to death, and, as in Ashanti or Dahomey, the hostile camps became veritable shambles. Great numbers of the planters escaped to the United States and other lands; the Spaniards were driven beyond the frontiers; the posts held by the English recaptured; the blacks, under their able leader, Toussaint Breda ("L'Ouverture"), were everywhere triumphant, and for a time peace was restored to the distracted land.

Although the white element had all but disappeared,

the blacks and Mulatoes, now assured of absolute freedom and political equality, were content to resume work on the plantations under the flag of the French Republic, which moreover acquired possession of the

BLACK NATIVES.

whole island by the treaty of Basle, in which Spain yielded the territory of San Domingo to France (1795).

Expulsion of the French

But a second reign of anarchy, with a renewal of all the horrors of the first revolt, was brought about by the

insane action of the First Consul, Bonaparte, who in 1802 sent an expedition of over 30,000 men to undo the work of the National Assembly, and re-establish slavery and the slave trade in Hispaniola. Despite the treacherous capture of Toussaint, who was carried away to end his days in exile, the blacks again flew to arms, and under the ferocious Dessalines, Toussaint's former associate, carried on a war of extermination, marked by unheard-of atrocities on both sides. To Dessalines' decree ordering the massacre of all whites, the destruction of the plantations and the burning of the settlements, the French responded by employing Cuban bloodhounds, whose appetite for Negro flesh was whetted by hunger. The terrible struggle was at last brought to a close by yellow fever, which carried off nearly 26,000 of the French forces, and enabled the blacks to proclaim their independence on 1st January 1804.

The Period of Independence—Historic Summary

Then followed a long series of political convulsions, civil strife, conflicts between the two States, purposeless revolutions, changes of government from republics to empires, kingdoms and dictatorships, wholesale military executions, repeated acts of incendiarism and other horrors, which have known little intermission down to the present time. Subjoined is a brief tabulated statement of the chief political events which have marked the turbulent period of independence:—

1804. Dessalines crowned emperor, as Jacques I.
1806. Dessalines assassinated; San Domingo again separated from Haiti; and reoccupied by Spain.
1807. Christophe, a Mulato, first president, then takes the title of Henri I., "King of the North."
1811. Pethion president; a numerous black aristocracy created.

1820–25. San Domingo proclaims its independence under the flag of Colombia; the two States reunited under Boyer, who is declared regent for life; Christophe commits suicide.

1843–48. Boyer deposed; San Domingo and part of Haiti proclaim the "Dominican Republic" (1844); recognised by France (1848).

1849–53. Buenoventura Baez president of San Domingo.

1849–56. Soulouque first president, then emperor of Haiti, as Faustin I.; attacks San Domingo and is repulsed.

1858–59. Fabre Geffrard proclaims republic of Haiti; Soulouque abdicates; execution of sixteen conspirators against President Geffrard.

1861–72. San Domingo declares for reunion with Spain; insurrection against Spain (1863); Spanish force lands; insurgents defeated (1864); Spain withdraws (May 1865); Cabral and Baez rival presidents (1865-72).

1865–67. Incendiary fires in Haiti; Salnave revolts and seizes Cap Haitien, where he removes refugees from British consulate, shoots them, and destroys the building; British squadron expels the rebels and hands over the forts to Geffrard (1865); renewed revolts against Geffrard, who is banished, and Salnave proclaimed president under a new constitution; revolt suppressed (1867).

1868–70. General rising against Salnave; rebels defeated, captives massacred; Salnave proclaims himself emperor; Saget and Dominguez proclaimed presidents by their respective adherents (1868); Salnave finally defeated, taken, and shot (1870).

1870–76. Saget, Dominguez, and Canal successive presidents of Haiti during a period of comparative repose.

1871–77. Great disorders in San Domingo; Baez moves against Haiti (1871); revolts for and against Baez and Ganier d'Aton (1873-75); outbreak in the capital; Guillermo declared president (1877).

1876–86. Troubles renewed in Haiti; execution of suspects by Dominguez, who flies to St. Thomas, and is succeeded by Canal (1876); after hard fighting Canal resigns; Salomon president (1879); fresh revolts (1883-84); Salomon re-elected (1886).

1880–86. F. A. de Mariño, a priest, president and dictator of San Domingo (1880-81); revolts suppressed with much bloodshed (1883-86); F. Bellini and U. Heureaux successive presidents of San Domingo (1884-86).

1888–92. Revolution in Haiti; Salomon deposed and banished (1888); insurrection of Télémaque; civil war between North and South Haiti healed by Hippolyte and Légitime; Hippolyte president (1889-90); sanguinary outbreak (1891).

1892-95. Heureaux re-elected president of San Domingo; conspiracy of General Bobadilla, who is taken and shot; rupture with France over a petty bank transaction; settled by payment of indemnity (1893-95).

1896-99. Simon Sam president of Haiti; rupture with Germany owing to arrest of Herr Lüders; ultimatum; indemnity paid (1897); disorders; martial law; great fire at Port-au-Prince; earthquake; general unrest (1898-99).

Social Condition of the Blacks—Vaudoux Rites

From this summary it appears that during the nineteenth century San Domingo has been successively under Spain (twice), France, the Haitian empire, Colombia, the Haitian republic, and independent. At the same time, the country has been wasted by fratricidal discord and constant wars with Haiti. So hopeless was the prospect in 1869 that the people voted for annexation with the United States, but the treaty prepared for that purpose was thrown out by Congress.

A much darker picture is presented by Haiti, where the masquerading in imperial robes, and the aping at civilised forms of government, have served only to reveal the inherent savagery of the people, and the incapacity of the Negro to make any real advance in the social scale by his own unaided efforts. Sir Spenser St. John, who resided in the State in an official position for over twenty years, and was an eye-witness of many of the scenes above briefly referred to, reluctantly concludes that "the Haitians are a hopeless people, and the most intelligent and best educated among them are more and more inclined to despair of the future of their country when they see the wreck that follows each wave of barbarism which every few years passes over their republic." [1]

This observer even shows that they have largely re-

[1] *Hayti, or The Black Republic*, 1884, p. 133.

verted to the savage state of their African forefathers, practising secret *Vaudoux*[1] rites, associated with human sacrifices, snake-worship, cannibalism of an extremely repulsive kind, indescribable orgies, and other abominations. All classes of Haitian society are tainted with the superstition, and it is notorious that the Emperor

A HAITIAN REGIMENT ON PARADE.

Soulouque himself was a member of the sect, and the Mulato General Therlouge one of its high priests. "If persons so high placed can be counted among its votaries,

[1] Properly *Vodun*, a term widely diffused amongst the Upper Guinea peoples, and supposed to indicate the all-powerful non-venomous serpent, who controls all human events, knows all things past, present, and to come, and communicates his power and will to the priest and priestess (*papaloi* and *mamaloi*, "papa-king" and "mama-queen") of the sect. Here *loi* is the French *roi*, which stands for both king and queen in the genderless Negro speech.

it may be readily believed that the masses are given up to this brutalising worship." When it is further remembered that "Haiti is not a God-forsaken region in Central Africa, but an island surrounded by civilised communities; that it possesses a Government modelled on that of France, with secretaries of state, prefects, judges, and all the paraphernalia of courts of justice and of police, it appears incredible that sorcery, poisonings for a fee by recognised poisoners, and cannibalism should continue to prevail in the island. The truth is that no government has ever cared resolutely to grapple with the evil. If they have not encouraged it, they have ignored it in order not to lose the favour of the masses" (*op. cit.* p. 228).

But it is right here to state that Mr. Hill dissents somewhat from St. John's pessimistic views, and while not denying the prevalence of cannibalism, argues that this and the associated practices are not proofs of retrogradation, but merely survivals of usages introduced by the slaves from their African homes. St. John's statements, he writes, "are indeed appalling, and after reading them, one unacquainted with the history and ethnology of the African races would conclude that Haiti is for ever lost; but his conclusions are not borne out by history, and the Haitians, instead of degenerating, are, excepting the Cubans, Puerto Ricans, and Barbadians, the only virile and advancing natives of the West Indies" (*op. cit.* p. 283).

Perhaps the truth lies somewhere between these extreme views, and it must at least be acknowledged that the social condition of the Haitians is not now (1900) quite so bad as to confirm the gloomy forebodings of St. John and a few other observers writing some two decades ago. It should be added that the improvement noticed

in recent years is largely due to the timely discovery the blacks have made that their former exclusive policy, treating both whites and Mulatoes as "Outlanders," was leading them to inevitable destruction. They will be saved, not by their independent efforts, but by the reversal of that policy, and the consequent introduction of other and superior racial elements into the political system.

Topography

San Domingo, which gives its name to the larger of the two black republics, claims to be the oldest of the European settlements still existing in the New World. Founded in 1494 by Bartolomeo, brother of the discoverer, it became the capital of Hispaniola in 1506, and has since remained the seat of government of the Spanish part of the island. It stands on the south coast at the mouth of the *Rio Ozama*, a small stream which here forms a sheltered harbour, but is obstructed by a shallow bar. San Domingo is still surrounded by picturesque mediæval ramparts over 2 miles in circumference, and is adorned by a superb cathedral, in which are deposited the remains of the family of Columbus, including, according to popular belief, those of the Admiral himself. The tradition is that by a pious fraud the body of Diego was substituted for that of his father, at the time of the official translation to Havana in 1781.

There are other memorials of past greatness—huge stone and concrete mansions with immense doors and windows, and the strong castle built by Diego to protect the place against the attacks of the Carib pirates. But all is now ruin and decay, and these imposing structures contrast strangely with the squalid straw-thatched dwellings of the present inhabitants.

On the north side of San Domingo the chief place is *Santiago de los Caballeros*, which is at present the largest and most prosperous city in the republic. It lies in the rich valley of the Rio Yaqui, amid extensive plantations of tobacco which is cultivated chiefly for the Hamburg market, and shipped at *Puerta Plata* on the north coast. Like the capital, Santiago is a very old settlement, which has suffered many calamities—attacks from buccaneers, fires, earthquakes, sieges—but has always recovered from these disasters, thanks to its favourable position in the finest agricultural region in the island.

In the same fertile region of the Vega Real are several other thriving little rural towns—*Coti*, *Moca*, *San Francisco de Macoris*—which forward most of their produce through the seaport of *Santa Barbara*, or *Samana*, on Samana Bay. West of the Samana Peninsula is a prosperous colony of United States Negroes, who are known as the "Kinsley Boys," from the Florida planter, Kinsley, founder of the settlement. The port of *Monte Cristi*, on the same coast near the Haiti frontier, dates from early times, but is now little frequented, the neighbouring borderlands having been depopulated during the wars between the two States.

In Haiti large centres of population are perhaps relatively more numerous than in San Domingo. But they no longer present any attractions to the visitor, nearly all the monuments of colonial times having been destroyed either by earthquakes or incendiarism.

Port-au-Prince, the capital, and by far the largest place in the republic, lies at the head of the south-eastern inlet of the Gulf of Gonaives, where it is sheltered by the encircling hills from the eastern trade-winds, and enjoys many natural advantages, of which little use is made by its present inhabitants. Its fine,

MARKET PLACE, PORT-AU-PRINCE.

broad streets, carefully laid out at right angles by the original French settlers in 1749, are now utterly neglected, and freely used as receptacles for garbage, broken bottles, and house refuse of all kinds. Much of this refuse finds its way to the harbour, which also receives considerable quantities of sediment from the neighbouring heights, and as no effort is made to dredge or improve the approaches, this fine seaport must soon become inaccessible to large vessels. All the old buildings have disappeared, either levelled by the terrific earthquake of 1770, or consumed by the devastating fires which have accompanied so many of the local outbreaks. The city is now, however, well supplied with water, and as many of the wooden houses have been replaced by fireproof structures, the conflagrations are likely to become less frequent and less disastrous in future.

Although one of the hottest places in the island, and destitute of all sanitary arrangements, Port-au-Prince is not nearly so unhealthy as might be expected. Cholera is unknown, and yellow fever, though a frequent visitor, is confined for the most part to the crews of the shipping in the harbour. The site on which it stands was originally chosen as a sort of sanatorium, and for some time bore the name of *L'Hôpital*. The "prince" referred to in its present title has not been identified.

North of the capital follow *Saint-Marc* and *Gonaives*, both on the east side of the gulf, and separated from each other by the great plain which is traversed by the Artibonite river, and faces the coast for a distance of about 50 miles. Near Saint-Marc, which commands the outlet of this fertile valley, stands the isolated headland of *Crête à Pierrot*, which had been converted into a formidable stronghold by English engineers, and is

memorable for the stout resistance here offered by the blacks to the French veterans during the war of independence. Gonaives, which gives its name to the great gulf between the two western peninsulas, figures largely in the turbulent history of the island. From this place Toussaint L'Ouverture, after his capture, was transported to France in 1802, and here his successor, Dessalines, proclaimed the independence of Haiti on 1st January 1804.

On the Atlantic side of the north-western peninsula are the three historic stations and seaports of *Môle Saint-Nicolas* at its western extremity, *Cap-Haïtien*, just east of *Acul Bay*, and *Port-de-Paix*, about midway between the two. Môle Saint-Nicolas, so named from the long promontory which projects on the north side, sheltering its harbour like a mole or breakwater from the Atlantic winds and waves, marks the spot where Columbus first landed. Despite its manifold advantages, this magnificent haven was almost entirely neglected till about the year 1764, after which it was successively occupied by French, Germans, and English, and vast sums expended on its now dismantled forts and ramparts. From the strategical stand-point the Mole is certainly the most important place on the west side of Hispaniola, because it completely commands the Windward Channel between Haiti and Cuba, and in the hands of a strong power might easily justify the title of the "Gibraltar of the New World," by which it has been called in anticipation of its future destinies.

When Columbus, coasting eastwards from St. Nicolas, reached the bold headland facing Tortuga Island, he was so charmed with the neighbouring district, watered by *Les Trois Rivières*, that he named it *Valparaiso*, the "Vale of Paradise." It was from the little haven at

MILOT.

the mouth of the river, now known as *Port-de-Paix*, that the French buccaneers, starting from their station of *Cayenne* on Tortuga Island, penetrated up the river valley to the interior, and thus prepared the way for the conquest of Haiti. There is now a project to run a railway up the same valley to *Gros Morue*, and there form a junction with another line which is eventually to traverse the great plain of the Artibonite.

East of Port-de-Paix by far the most important place is *Cape Haïtien*, commonly called *Le Cap* ("The Cape"), which is pleasantly situated on a spacious land-locked harbour approached by a deep, narrow passage. Le Cap, which still ranks as the second city in the republic, was the first in colonial times, when it was the capital under French rule, and from its wealth and splendour familiarly known as "Little Paris," or the "Paris of Haiti." But its glories faded with the disappearance of its pleasure-loving white inhabitants, and its ruin was all but completed by the disastrous earthquake of 1842, in which several thousand people were destroyed. It is still remembered against the blacks of the surrounding district how they rushed in, not to lend a helping hand to the half-buried citizens, but to rob and plunder indiscriminately. But, although it has not yet rebuilt its ruined monuments, and has suffered other disasters, including a bombardment by an English squadron in 1865, Le Cap has recovered much at least of its former material prosperity, and now serves as the outlet for the produce of a prosperous agricultural district.

Near the inland town of *Milot*, which lies in this district 9 miles south of Le Cap, are situated the astonishing ruins of the castle of *Sans-Souci* and of the still more wonderful fortress of *La Ferrière*, both built by General Christophe, who assumed the title of "Henri

THE PALACE OF SANS-SOUCI.

I., King of the North" when Haiti was divided into two rival States (1807-25). "It requires a visit," writes Sir Spenser St. John, "to induce one to believe that so elaborate and so handsome a structure could exist in such a place as Haiti, or that a fortification such as the citadel could ever have been constructed on the summit of a lofty mountain 5000 feet above the level of the sea. Some of the walls are 80 feet in height and 16 feet in thickness, where the heavy batteries of English guns still remain in position. All is of the most solid masonry, and covers the whole peak of the mountain. We were really lost in amazement as we threaded gallery after gallery, where heavy fifty-six and thirty-two pounders guarded every approach to what was intended to be the last asylum of Haitian independence. Years of the labour of toiling thousands were spent to prepare this citadel, which the trembling earth laid in ruins in a few minutes. What energy did this black king possess to rear so great a monument! But the reverse of the medal states that every stone in that wonderful building cost a human life" (*op. cit.* p. 12).

In the Tiburon Peninsula the most noteworthy places are *Jérémie* on the north-west, *Léogane* on the north-east, and *Les Cayes* and *Jacmel* on the south side. Jérémie, birthplace of the elder Dumas, forwards the cocoa which is grown on the southern slopes of the La Hotte range, and is of prime quality. Léogane, the *Yaguana* of the aborigines, lies a short distance west of Port-au-Prince, and was for a short time the capital of the republic before the seat of government was transferred to that place. Les Cayes is the busiest seaport on the coast, facing the Caribbean Sea. Although lying in a malarious, marshy district, it enjoys the advantage of a spacious harbour sheltered from the southern gales by

the neighbouring islet of *La Vache* and the fringing reefs or cayes, from which it takes its name. At the western extremity of the Tiburon Peninsula lies the little port of *Les Irois*, that is, in the local patois, *Les Irlandais*, a name which recalls the attempt made to found an Irish settlement on this coast in the eighteenth

STREET SCENE IN PETIT GOÂVE.

century. A little farther south was the rival colony of *Les Anglais*, a name which is still borne by a little fishing-hamlet close to the Tiburon headland.

Administration of San Domingo

San Domingo, officially called *La Republica Dominicana*, is governed by the Constitution of November

1844, which was reproclaimed after the final withdrawal of the Spanish forces in 1865, and modified several times down to the year 1887. The legislative functions are vested in a National Congress of twenty-two deputies chosen by popular vote, with restricted suffrage, for the term of two years, in the proportion of two for each province and two for each district. But the powers of Congress are restricted to the general affairs of the State, supreme authority being exercised by a President chosen by an Electoral College for the term of four years. The practical work of administration is in charge of a ministry which is appointed by the President, and composed of five members for the departments of the Interior, Finance and Trade, Justice and Education, War and Marine, Public Works and Foreign Affairs. The President also nominates the governors of the provinces and districts, who in their turn appoint the prefects or magistrates of the various communes and cantons. But the communes enjoy a measure of self-government under the Municipal Corporations elected independently by the citizens.

Roman Catholicism is still the State religion, although other beliefs are tolerated under certain reservations.

Primary instruction is free and compulsory, being supported partly by the communes and partly by State aid. But in 1900 schools of all kinds (primary, superior, technical, normal, with a professional college having the character of a university) numbered only about 300, with an estimated attendance of 10,000 pupils, scarcely one in sixty of the whole population.

In recent years there has been a general cessation of wars and political troubles, and the country would now appear to be enjoying a fair measure of material

prosperity. Thus the revenue, derived mainly from duties on exports and imports, advanced from £130,000 in 1892, and £276,000 in 1895, to £326,000 in 1898, while the expenditure now averages considerably under £300,000. Provision has also been made for the regular payment of the interest on the foreign debt, which in 1900 amounted to £4,236,000. On the whole the prospects of the Dominican Republic may be considered as fairly bright, thanks, no doubt, to the preponderance of the whites and the Mulatoes over the full-blood Negro section of the community.

Administration of Haiti

Although the independence of Haiti was proclaimed in 1804, and has not since been contested, the present Constitution dates only from June 1867. It provides for a National Assembly of two chambers—a Senate and House of Representatives—all the members of which are paid at the rate of £360 a year during session. The senators, thirty-nine in number, are nominated for six years by the lower house from two lists presented by the executive and the electoral colleges, one-third retiring by rotation every two years. The executive power is vested in a President, who, according to the Constitution, should be elected by popular vote, but has in recent years generally been chosen by the National Assembly, and occasionally even by the military, or else by delegates of parties acting as representatives of the people. The President, who is nominated for a term of seven years, and receives a salary of £4800, is aided in the administration of affairs by four heads of departments.

In other respects the Constitution is, at least in

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theory, extremely liberal—providing for absolute freedom of worship, equality of citizens before the law, trial by jury, personal freedom, exemption from arbitrary arrests, gratuitous and obligatory attendance at the primary schools, freedom of the press and of speech, and security of private property. Even the laws restricting citizenship with the right to possess real estate to the blacks have recently been repealed, and all foreigners can now become citizens by complying with the regulations established by law. In fact no intelligent Haitian thinks it any longer possible to keep his country in isolation, and as other favourable forces are also at work, some recent observers think that order and real progress may still be secured for a land which has hitherto been looked upon as hopeless.

A favourable sign is the large amount which is annually devoted to public instruction, and in 1898 exceeded £200,000. In that year the total revenue, derived almost exclusively from customs, was little more than £1,500,000, and the expenditure £1,800,000, while the public debt, external and internal, exceeded £5,000,000. In connection with this debt it should, be noted that Haiti has always endeavoured to meet her financial obligations, and, in order to avoid difficulties with foreign powers taking advantage of her weakness has often paid preposterous claims, which would certainly have been repudiated by any State strong enough to resist such extortion.

CHAPTER XVIII

JAMAICA

Extent—Position—Area—Population—Physical Features—The Blue Mountains—Plateaux and "Cockpits"—Rivers—Scenery—Climate—Flora—Fauna—Inhabitants—Historic Survey—The Maroons—Present Elements of the Population—Agricultural Resources—Social Condition of the Freedmen—Topography—Political Dependencies—Administration.

Extent—Position—Area—Population

JAMAICA, which lies about 75 miles west of Hispaniola, and nearly the same distance south of Cuba, ranks in size as the third of the Greater Antilles, being considerably larger than Puerto Rico, but vastly smaller than the two other members of the group. In population it takes the last place, being exceeded in this respect even by Puerto Rico. On the other hand it is by far the largest and most populous of all the British Antilles, being nearly equal in extent to the whole of the Bahamas, and not greatly inferior in the number of its inhabitants to all the other English possessions in the West Indies.

In its somewhat uniform contour-lines and truncated rectangular form Jamaica resembles Puerto Rico, and is disposed in the same west-east direction. It has an extreme length of 144 miles, its greatest breadth being 50 miles, which between Kingston and Annatto Bay is

narrowed down to less than 22 miles. Notwithstanding its former connection with the Great Antillean chain, it now holds an independent and isolated position in the American Mediterranean, of which it is the geographical centre. From Haiti it is separated by a cavity of at least a thousand fathoms, and from Cuba by the abysmal waters of the great Bartlett depression, three thousand fathoms deep. Its central position in this terraqueous world is determined by a number of straight lines, which, if drawn through Jamaica from the head of the Gulf of Honduras to St. Thomas, from Florida to Venezuela, and from Galveston to the mouth of the Orinoco, will all be bisected by that island.

Including the Turks and other islets in the Bahama Archipelago, which for administrative purposes are attached to Jamaica, the total area exceeds 4500 square miles, while the collective population (1891 census) falls little short of 650,000, distributed as under:—

	Area in sq. miles.	Pop.
Jamaica	4200	640,000
Turks and Caicos Islets; Morant and Pedro Cays	224	4,760
Cayman Chain	130	4,340
Total .	4554	649,100

Physical Features—The Blue Mountains

As already explained, Jamaica forms geologically a western extension of the Tiburon Peninsula in Haiti, while its orographic system presents many points of analogy both with the Cuban Sierra Maestra and with the Sierra Cibao of Hispaniola. The *Blue Mountains*, as the main range is called, from the azure haze which seems to enwrap the long line of crests when seen on

the distant horizon, traverse the eastern districts for a distance of about 40 miles in a west-by-north direction. Towards the centre they culminate in the *Blue Mountain Peak* (7360 feet), beyond which they gradually decrease westwards, and here fall below the plateau of rugged white limestone hills, which flank the range on both sides, and occupy most of the central and western parts of the island. From the main ridge are projected at right angles numerous lateral offshoots, which terminate near the coast in steep truncated bluffs, leaving only a narrow strip of low-lying plains between the uplands and the sea.

This peculiar disposition of the mountain system is a marked topographic feature, to which has been applied the expression "back-coast border." It everywhere presents a precipitous sea-front of chalky cliffs, with a mean height of 1200 feet on the north side of the island, deeply ravined at intervals by the action of running waters. Its general aspect shows that it consists of a series of old marine beaches, marking the successive steps in the uplift of the coast-lands above sea-level. At Montego Bay may be seen as many as six distinct beaches rising one above the other in step-like order.

Besides the culminating point, several other summits, such as *John Crow Hill, Silver Hill,* and *St. Catherine's Peak* (5036 feet); rise above the main range, which maintains a mean altitude of over 4500 feet throughout its entire length. It is crossed by five or six passes, one of the most frequented of which is the *Cuna-Cuna* gap, which falls to 2700 feet, and is easily surmounted by travellers on horseback. The range consists largely of friable shales, clays, and conglomerates, with some isolated limestone beds and patches of soft or decomposed

igneous rocks. Considering the loose nature of the materials, and the rapid disintegration going on for ages, it must be inferred that the whole system was formerly far more elevated and extensive than at present. "There is no reason why the summits in times past may not have extended as high as their kindred in the Sierra Maestra of Cuba, over 8000 feet, or in Santo Domingo, over 10,000 feet" (Hill, p. 190).

Plateaux and "Cockpits"

The hilly limestone tableland which covers the central and western districts, and culminates in *Mount Diablo*, reported to be over 3000 feet high, presents a wonderfully diversified relief of heights, valleys, and lovely landscapes. Here and there occur those singular funnel-shaped sink-holes which are locally called "cock-pits," and are often 500 feet or upwards in depth.

Connected with these strange formations are the deep basin-shaped valleys encircled by rugged limestone walls from 1200 to 2500 feet high, some without any seaward outlet, some draining through numerous brooks and rivulets to the coast streams. *St. Thomas-in-the-Vale*, one of the largest of these basins, forms an almost perfect circle 10 miles in diameter, with rich alluvial bottom-lands, which are completely enclosed by moun-tain scenery of surpassing loveliness. It is drained by no less than ten copious streams, all converging in the single channel of the *Rio Cobre*, which forces a passage to the sea through the picturesque *Bog Walk*[1] gorge.

[1] "Bog Walk" is a curious instance of popular etymologies, being an English transformation of the Spanish *Boca del Agua*, "Water's Mouth." In the same way *Agua Alta* ("High Water") has become *Wag Water; Mont Agua, Moneague*, and so on.

Rivers—Scenery

Like Puerto Rico, Jamaica everywhere abounds in running waters,[1] some belonging to the inland drainage, others reaching the sea in independent channels, but none navigable except the *Black River*, which reaches the south-west coast from the central uplands, and is accessible to light craft for a distance of 25 miles from its mouth. These rushing torrents and meandering rivulets, of which nearly two hundred have been described, lend animation to the scenery, which is spoken of in enthusiastic language by all observers.

Despite the endless diversity of relief, the serrated crests, lofty peaks, gushing streams, and broad expanse of surrounding waters, "the scenery of Jamaica is not wild or crag-like, nor does it impress one with the immensity of some less mountainous regions. The massive grandeur and distant outlines of the mountains are largely lost, owing to closeness of view and the enveloping clouds. It is only the exquisite verdure and delicacy of the vegetation and the dewy mists that hover over them that hold the rapt attention. In the western parishes upon the limestone plateau, where sculptured hills and valleys everywhere abound, to the wealth of form are added marvellous colours. The pale greens of the bamboo patches, rustling like feathery plumage, the dark evergreens of the pimento and mango trees, the old gray greens of the orchid-decked ceibas, and the splashes here and there of growing cane-fields of an indescribable pale turquoise-blue green, adding lighter touches to the emerald background of the forest setting, overwhelm one with a beauty which changes with every

[1] The native name of the island, *Xaymaca*, has the meaning of "land of springs"; here $x = sh$, whence the English *j*.

passing cloud or angle of the sun into wonderful blues, purples, and olive tints. This gentler aspect of the landscape is not diminished by the touch of man. The well-built roads, the neat stone walls, the comfortable homes of the planters, the sleek, browsing cattle, add to the beauties of the tropical landscape the charms of the English countryside" (Hill, p. 198).

Climate

While varying considerably with altitude, aspect of the land, and other local conditions, the climate of Jamaica is on the whole naturally salubrious. Thanks to the perfect sanitary arrangements and quarantine everywhere strictly enforced, the normal mortality scarcely exceeds 20 per thousand, which is about the same as that of London. Lying under the shelter of the Blue Range and central uplands, the southern section of the island is both drier and warmer than the northern, hence also less fertile, and in places even somewhat arid. At Kingston, which faces the Caribbean Sea, the range of temperature lies between 67° and 90° F., and here the yearly rainfall seldom exceeds 44 inches, whereas it rises to 90 and even 100 on the higher slopes facing northwards. For the whole island the average is about 66 inches, while the mean temperature, so far as determined by altitude, falls from 78° F. at the coast to 73°, 62°, and 55° at the respective elevations of 2000, 5000, and 7400 feet.

As in all tropical lands, malarious agues and dysentery are prevalent on the hot, low-lying coast-lands. But yellow fever, though often spoken of, is not endemic, and since the enforcement of the quarantine regulations, seldom visits the island. There was, however, an out-

break in 1897, caused by some Cuban refugees who escaped the vigilance of the sanitary inspectors. With ordinary precautions, most of the uplands above 2000 feet would be more suitable for European settlers than for the present black population. Certain upland districts have even been recommended especially for consumptive patients, and health resorts have been established in the cinchona plantations of Hope Gardens and on the Newcastle heights, where there is a permanent military encampment at an elevation of nearly 4000 feet above the sea.

ALLSPICE.

Flora—Fauna

Thanks to a sufficient, and in places an excessive, precipitation, most of the surface is clothed with a rich tropical and sub-tropical vegetation. In the woodlands, which still cover a considerable space, the prevailing forms are the Jamaica cedar, logwood, fustic, plantain, mango, ceiba, and bamboo, while the cactus, acacia, and other thorny plants flourish on the dry southern coastlands. A characteristic species is the pimento (*Pimenta officinalis*), that is, the allspice-tree, which is almost unknown elsewhere, and is a source of considerable revenue to the island. It takes its name from the Spanish word

pimiento, pepper, and yields a pale yellow volatile oil resembling that of cloves in taste and fragrance. The alternative English name, "allspice," has reference to its peculiar flavour, which is somewhat like a mixture of cinnamon, cloves, and nutmeg. Jamaica pepper, as it is

Photo. by Valentine.

NUTMEG.

also called, from the resemblance of its berries to peppercorns, belongs to the order of *Myrtaceæ*, and is cultivated in plantations which are locally called "pimento walks." Most of the tropical exotics that have been introduced thrive well, and the sugar-cane yields an excellent spirit known in commerce as "Jamaica rum."

The native fauna shows the same puzzling absence of

large animals as the other Antilles. At the discovery not a single indigenous mammal was known to exist in the island, although a little later doubtful mention is made of a few monkeys, and of the *alco*, or "dumb dog," which, however, appears to have been a raccoon, and was met also in Cuba. Yet those mammals that were afterwards imported found in Jamaica for the most part a congenial home. Such was the case not only with cattle and other domestic animals, but also with the Norway rat, which multiplied to such an extent that the mongoose had to be introduced to prevent it from destroying the sugar-cane plantations. Then the mongoose itself overran the whole land, preying indiscriminately on cats, dogs, poultry, and, according to report, even on the black "piccaninnies." Nor were the rats exterminated, but only driven to change their habits and take refuge in the tree-tops, where they did even more mischief by destroying the little birds and reptiles which had hitherto kept down the field-ticks, grubs, and other noxious insect forms. Thus the balance established by Nature when left to herself was everywhere disturbed, with results that must have proved disastrous had it not been to some extent restored by the increase of the ticks, which have proved a deadly enemy to the mongoose.

Bird life abounds, and comprises parrots, pigeons, water-fowls in great variety, and as many as twenty species of songsters. Butterflies and beetles are also numerous, and amongst the fireflies is a member of the elaterid, or click-beetle family, which is met also in Cuba, and bears a diminutive phosphorescent or electric light on each shoulder. Ants, mosquitoes, and sand-flies are confined to the lowlands, and the island is entirely free from venomous snakes, although the scorpions and centipedes are slightly poisonous.

The numerous rivulets are not well stocked, and edible fishes are rare in the surrounding marine waters, which are frequented by the West Indian seal, the manatee, and (in-shore) by the alligator. Near the coast is also found the widely-diffused land crab (*Cancer ruricola*), which has the curious habit of withdrawing to the uplands after depositing its eggs on the sea-shore. When hatched, the young immediately start in countless multitudes for the mountains, myriads falling a prey to birds, reptiles, and other enemies along the line of march. The strong instinct to return periodically to the coast is obviously a survival from the time when the species inhabited the shallow marine waters, and afterwards gradually moved inland.

Inhabitants—Historic Survey

In Jamaica there are few traces of primitive man, and the human remains found in some of the limestone caves probably belonged to the Arawak race, which was found in almost exclusive possession of all the Greater Antilles at the time of the discovery. But here, as elsewhere, these aborigines soon fell victims to the greed and rapacity of the early planters, and had to be replaced by black labour imported from Africa. Discovered by Columbus during his second voyage in 1494, the island had remained unoccupied till the year 1509, when a few settlements were founded under the first governor, Esquivel, and by him the natives had no doubt been treated with great kindness. But the work of extermination was carried out so expeditiously by his ruthless successors that nearly all had disappeared about a century before the advent of the English in 1655. The squadron in that year despatched by Cromwell

against Hispaniola, having failed to reduce that island, made amends by the conquest of Jamaica, which was at that time occupied by scarcely 1500 Spaniards and about the same number of Negro slaves.

Most of the whites having escaped to Cuba, the island was resettled by fresh immigrants, chiefly from the British Isles, and these not only retained the slaves of the Spanish fugitives, but took steps to increase their numbers. Jamaica became, in fact, a convenient depôt and centre of distribution for the Negroes transported to the New World by the Bristol slavers, and, in connection with this business, the island was also for many years a veritable hot-bed of buccaneering activities. The Spanish Main was, of course, at that time looked upon as a more or less legitimate field for such operations, and Port Royal was for a long period not only the chief centre of the West Indian slave trade, but also the headquarters of the famous corsair, Morgan, "prince of buccaneers."

Meantime the colonists, who were in the enjoyment of many privileges, continued to increase rapidly, and their prosperity may have been to some extent due to the large number of Jewish traders who were amongst the first British settlers. It has been calculated that between the conquest and the suppression of the slave trade (1655-1807) as many as a million Africans must have been landed in Jamaica, and of these about one-half remained in the island, the rest being reshipped and distributed amongst all the surrounding plantations. But when slavery itself was abolished in 1833 not more than 309,000 had survived to benefit by the Act. Obviously the Negroes had not undergone any natural increase during the period of servitude, which is perhaps not surprising considering the extremely harsh treatment to which they were subjected by the Jamaica planters.

The Maroons

Even in Spanish times many had already escaped from the plantations, and sought refuge in the more inaccessible upland valleys and "cockpits" of the interior, and these *Maroons*,[1] as the runaways were called, were afterwards joined by others driven to desperation by their ruthless English taskmasters. They thus became strong enough to set up little independent republics in the hilly districts, and especially in the upper valley of the Cobre or Dry river, in the centre of the island. Here they kept up a constant war of reprisals against the planters, and about 1730 threatened to overrun the colony itself under their redoubtable leader, Cajoc.

Even after their reduction in 1737 by the aid of the Mosquito Indians from Nicaragua and of bloodhounds from Cuba, they again revolted, and at last compelled the authorities in 1759 to come to terms, and recognise the independence of the petty Maroon republics under certain conditions. Amongst these were the engagement to open up the country by the construction of roads, and the promise to surrender "alive or dead" all runaways from the plantations. The result was that their retreats became more exposed to attack, while they themselves lost all hope of aid from the slaves when the final struggle came in 1795. The immediate cause of the outbreak was the treatment of two Maroons of Trelawney Town, who for a petty theft were sentenced to be flogged by the hangman, against the terms of the treaty, by which all freedmen and "republicans" were exempted from that degrading punishment. After the pacification in 1796 about 600 of the captured Maroons were

[1] A corruption of the Spanish *Cimarron*, a wild highlander, from *cima*, mountain-top.

removed to Nova Scotia, where many still survive, and whence large numbers were later transported to Sierra Leone. At present the Jamaica Maroons, like the descendants of the freedmen, are loyal British subjects, although "African at root, with a superficial graft of Evangelicalism. They have the failings of a wild and half-civilised people; they are idle; to beg they are not ashamed; they can steal upon occasion, and not feel much shame when detected. When aroused they are fierce and vindictive, but they have, on the other hand, a large share of untutored virtues. They are courteous, loyal to their word, faithful to their friends, active and plucky."[1]

Present Elements of the Population

But the Maroons are gradually losing their distinctive characters, and merging in a homogeneous black population with those sprung from the slaves emancipated in 1833. The arrest of material progress, and the general dislocation of the economic relations which followed the Abolition Act, is commonly ascribed to the indolence of the freedmen, who at once "struck work," and have ever since persistently resisted all inducements to labour on the plantations of their former masters. But some of the disastrous results were certainly also due to the large landowners themselves, who were for the most part absentees, wasting their princely revenues abroad, and indulging in such extravagances that many became insolvent, despite the £5,855,000 which fell to their share in the distribution of the public moneys voted by the Imperial Parliament in compensation for the manumission of their slaves.

Since the emancipation the tendency has been to

[1] Lady Blake, *North American Review*, Nov. 1898.

break up the heavily mortgaged large domains, and the corresponding development of small holdings, owned almost exclusively by the freedmen, has been accompanied by a falling off in the white, and a steady increase in the black and coloured (Mulato) elements of the population. In 1830 the proportion of the former to the latter was about 1 to 16; but in 1891 it was no more than 1 to 41, and appears to be now (1900) less than 1 to 60. Thus:—

	1830.	1891.	1900 (est.).
Whites	20,000	15,000	12,000
Blacks	324,000	488,000	530,000
Coloured		122,000	140,000
Total	344,000	625,000	682,000

Agricultural Resources

In 1891 (last census) the Asiatic coolies employed on the old estates, where the freedmen refuse to work, numbered 10,000, nearly all East Indians, with a few hundred Chinese, and these, with 4500 recent arrivals from various parts, raised the whole population to 640,000 in that year. Of these the great majority are full-blood Negroes, now mostly in possession of small freeholds, which range from under 5 to over 200 acres in extent, and on which they grow a considerable variety of crops, such as maize, yams, pimento, bananas, coco-nuts, tobacco, ginger, and oranges. Although most of this produce is raised for local consumption, agricultural prospects have thus been placed on a broader basis, and the people are no longer dependent, as formerly, on the output of the staple products—sugar, rum, and coffee.

About 30,000 acres are still under cane, which, however, is now grown chiefly for the preparation of rum, the yield of which fell from 5,000,000 gallons in

1805 to 2,000,000 in 1898. The coffee plantations cover some 22,000 acres, and one choice variety, grown on the southern slopes of the Blue Ridge, commands the highest price — £5 to £8 per cwt. — in the London market. In recent years a great stimulus has been given to the fruit industry by American enterprise, and increasing quantities of bananas, coco-nuts, and oranges are now exported to the United States. Orange culture is a remarkable revival, brought about by grafting the fine Florida stock on the old trees, which were introduced by the Spaniards, but had deteriorated through long neglect. But there is still room for expansion, as not more than 170,000 acres are under tillage and 500,000 under pasture, out of a total of 2,700,000 acres. Much, of course, is unproductive, and 330,000 acres are covered by forests. But large tracts remain, which might be profitably cultivated.

Social Condition of the Freedmen

Regarding the present status of the freedmen, on whom depend the destinies of the island, contradictory reports are current. That their social condition is greatly superior to that of the Haitian blacks is gainsaid by nobody. But while some observers hold them to be unprogressive, and therefore believe that Jamaica can never recover its former prosperity, others take more hopeful views, arguing that the island has already passed through the crucial troubles due to its dependence on the slave-owning sugar and coffee planters, and is now for the first time entering on a period of real prosperity, owing to the increasing number of diversified small farms. Mr. W. P. Livingstone, who dwells in their midst and knows them well, points out that "the

race, as it exists to-day, is a product of sixty years of freedom — on the whole, a plain, honest, Anglicised people, with no peculiarity except a harmless ignorance and superstition. Looking at it in contrast with what it was at the beginning of the period, one cannot but be impressed with the wonderful progress it has made. And where there has been steady progress in the past, there is infinite hope for the future." [1]

This is fully borne out by Mr. Hill, an unbiassed American witness, who draws an extremely pleasant picture of the present social condition of the people. "The universal aspect of order and the respect for law that everywhere prevail in Jamaica are no less conspicuous than the natural beauties of the island, and are noted by any one who has travelled in the more unruly places of the tropics. The stranger is welcomed with a sincere hospitality and courteous greeting; the island is clean, and the laws are for the protection of the visitor as well as of the resident—not the robbery of the individual or the enrichment of the official. Neatly uniformed constabulary of respectful mien and open eyes see that the laws are obeyed, and the poorest Negro, as well as the richest planter, feels that they are for his special benefit and protection, and respects them in a spirit which is not found even in our own country. In fact, in the government of Jamaica we have an example of that perfection of colonial administration in which England excels" (*op. cit.* p. 203).

Although still cherishing some of the old heathen superstitions, the Jamaica Negroes are all outwardly Christians of various denominations. The Church of England is the most favoured, with over 40,000

[1] *Black Jamaica*, 1900. The author, it may be added, is editor of the *Jamaica Gleaner*, a well-known local organ.

adherents, after which come the Baptists (35,000), the Methodists (25,000), the Presbyterians (12,000), and the Roman Catholics (10,000). All the grosser practices, such as the cannibalism and human sacrifices associated with the Vaudoux rites in Haiti, have long died out, and victims, human or animal, are no longer offered either to Tunin, the storm god, or to Naskin, the beneficent deity, who takes the blacks back to their African homes after death. Other savage customs connected with witchcraft survive in milder forms, and a curious reminiscence of the ordeal of the poisoned cup is the practice of rubbing a little ochre on the lips of persons charged with any serious crime. All are now peaceful, law-abiding citizens, and there have been no serious disturbances since the sanguinary outbreak of 1865 in the Morant district in the south-eastern corner of the island, for which the blacks were not perhaps entirely to blame.

No doubt Jamaica is not yet an earthly paradise, and there are difficulties and periods of depression, although even these, according to Sir David Barbour's official report (August 1899), are largely of a financial nature. In this valuable document existing troubles are traced to four primary causes: 1. A desire for material improvements which, although often productive of good, has in some cases led to excessive and injudicious expenditure; 2. The fall in the quantity and value of rum and sugar, arising from special causes (lack of local enterprise and the competition of bounty-fed beet-sugar); 3. Improvident and ill-considered contracts for railway extensions; 4. Loans raised for public works not directly remunerative.

KINGSTON. *Photo. by Valentine.*

Topography

Owing to the preference almost everywhere shown by the Negro race for agricultural pursuits, the great bulk of the islanders dwell in small villages and hamlets dispersed over wide areas. From the subjoined table of the chief towns it appears that one only has a population of over 10,000, and it is noteworthy that in all these

Photo. by Valentine.

PORT ROYAL.

places the whites and mulatoes collectively out-number the blacks, who form the immense majority in all the rural districts:—

Chief Towns.	Pop.	Chief Towns.	Pop.
Kingston . . .	46,500	Montego Bay . .	5,000
Port Maria . . .	7,000	Falmouth . . .	3,000
Spanish Town . .	5,000	Savanna-la-Mar . .	3,000

Kingston, the present capital, standing on the south

coast, just east of the Portland Ridge promontory, has been the chief harbour and centre of trade since the year 1693, when the neighbouring city of *Port Royal* was destroyed by one of the most tremendous earthquakes on record. Port Royal, which was nearly swept into the sea by the terrific hurricane of 1772, stands at the western extremity of the so-called "Palisades," that is, the narrow strip of sands almost completely enclosing Kingston Harbour southwards, and leaving only a channel 26 feet deep and 165 feet wide between Port Royal and the mainland.

The harbour, which is the finest in the island, though of somewhat difficult access, the approach to the channel being obstructed by quite a little archipelago of cays, has a depth of over 30 feet, and is connected with the rest of the Antilles, North America, and Great Britain by regular lines of steamers and submarine cables. It also communicates westwards with *Spanish Town*, which lies in the valley of the Dry River inland from the Portland Ridge, by which its harbour is sheltered on the south side. This is now known as the *Old Harbour*, but is little frequented, and Spanish Town itself, which is the *Santiago de la Vega* founded by Diego Columbus in 1525, has long ceased to possess the importance which it enjoyed as the former seat of government, although it retained the official title of capital down to the year 1869.

The slopes rising above the arid plains of Kingston and Spanish Town are laid out with charming pleasure-grounds, parks, and cinchona plantations. Here also is a famous botanic garden, where the bread-fruit tree and many other useful exotics have been acclimatised, and thence distributed far and wide over the West Indies. *Newcastle*, which stands on the heights amid these sylvan

attractions, enjoys a healthy climate, and is one of the most delightful residences in the Antilles. On the north-west coast are the exposed harbours or roadsteads of *Falmouth* and *Montego Bay*, and farther east the little seaport of *Santa Ana*, close to *Sevilla*, where a ruined church marks the site of the first settlement made by the Spaniards in the island. In the records of the

Photo. by Valentine.

NEWCASTLE.

Maroons mention often occurs of Montego Bay, which served as the seaport of the little republic of *Trelawney Town*, called also *Maroon Town*, where began the great rising of 1795. *Morant Town* on the south-east coast was the scene of the last revolt in 1863, after which the island has been free from political and social troubles. The term "Morant," applied to the town, cape, bay, and harbour, is the Spanish *Morante*, "delaying," and has

reference to the vessels coming from the southern seaports, which are often weatherbound when trying to double *Morant Point* at the extremity of the island in the face of the eastern trade winds.

Port Antonio, not far from this headland, was till recently an obscure fishing hamlet, but is now the second seaport in the island. It owes its prosperity to the development of the banana industry, of which it is the chief centre and outlet. Port Antonio has also the advantage of two safe harbours, the larger and deeper of which is now regularly visited by fruit steamers from the United States. Most of the bananas consumed in the northern parts of the Union are shipped at Port Antonio, which is connected by rail with Kingston, 125 miles distant, and with fine avenues with several points of interest in the island.

One of the excellent highways, for which Jamaica is justly famous, leads southwards over the Cuna-Cuna Pass to *Bath*, a popular watering-place on the opposite coast. The sulphuric springs of this district, containing a large proportion of hydrosulphate of lime, are the hottest in the island, and are supposed to be efficacious for rheumatism, gout, and skin affections.

Political Dependencies

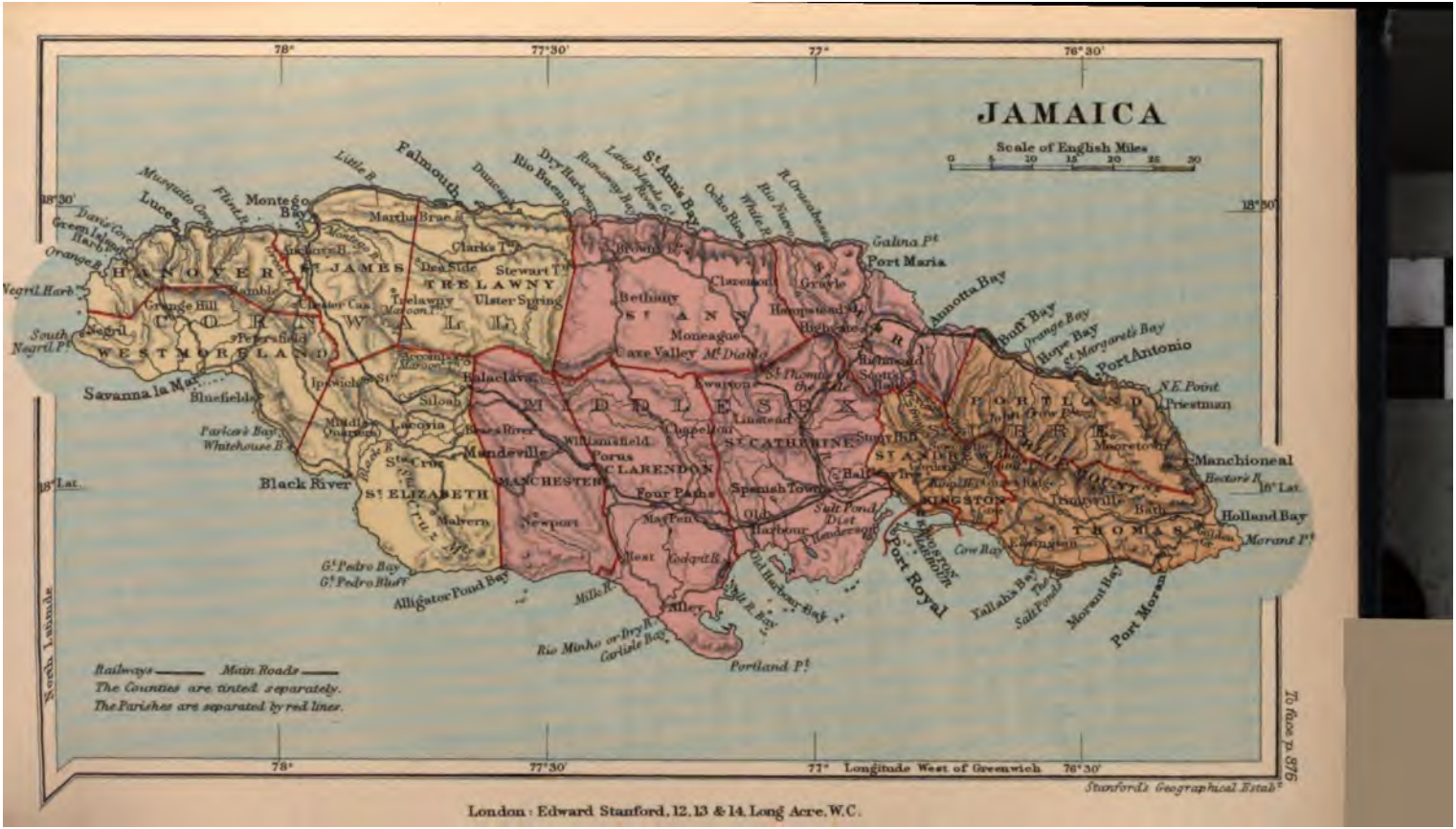
Of the insular groups attached for administrative purposes to Jamaica the most important are the Turk and Caicos Islands, which belong geographically to the Bahamas. They lie at the south-eastern extremity of the archipelago, and comprise two clusters of over thirty small cays with a total area of 170 square miles. Only six are inhabited, the largest being *Grand Caicos*, 20 miles long by 6 broad. But the Commissioner, who has

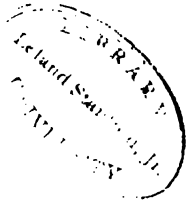
charge of the administration under the Governor of Jamaica, resides at *Grand Turk*, in which, though only 7 miles by 2, is concentrated half the population of the whole group. The chief industry is salt raking, which yields about two million bushels annually for the North American markets.

On Jamaica are also dependent the CAYMAN ISLANDS, which comprise *Grand Cayman*, residence of the Commissioner, 17 miles long by 6 broad; *Little Cayman* and *Cayman Brac*. There is good pasturage; coco-nuts and turtle are exported; and the population exceeded 4300 in 1891. The Caymans have a special interest in the physiography of the American Mediterranean, being all that now remains above water of a submerged ridge, which appears to have at one time formed a land connection between the Antilles and the mainland. They are disposed in a line with the *Misteriosa* reefs, through which the submarine range can be traced all the way from Cape Cruz in Cuba to the *Chinchorro Bank* off the east coast of Yucatan.

Administration

Such was the disturbance caused by the Act of Abolition in the social relations of the Jamaicans, that the measure of self-government which they had hitherto enjoyed had to be suspended or at least largely curtailed. The island thus became a Crown Colony, with a Governor, a Privy Council, and a Legislative Assembly, all nominated by the Sovereign. But representation was partly restored in 1884, when nine out of the fourteen members of the Assembly were made eligible by the people. In all the fourteen parishes the administration of local affairs is now also reserved for boards of councillors, who are returned by the white and coloured electors.


JAMAICA
Scale of English Miles
0 5 10 15 20 25 30
78°
77°30'
77°
76°30'
18°30'
18° Lat.
North Latitude
HANOVER
ST JAMES
TRELAWNY
WESTMORELAND
ST ELIZABETH
MANCHESTER
CLARENDON
ST ANN
MIDDLESEX
ST CATHERINE
ST DAVID
PORTLAND
ST THOMAS
KINGSTON
Montego Bay
Lucea
Falmouth
St Ann's Bay
Port Maria
Annotto Bay
Port Antonio
Manchioneal
Holland Bay
Morant Pt
Black River
Savanna la Mar
Bluefields
Mandeville
Spanish Town
Kingston
Port Royal
Old Harbour
Portland Pt
Rio Minho or Dry R.
Alligator Pond Bay
G.t Pedro Bay
G.t Pedro Bluff
Railways
Main Roads
The Counties are tinted separately.
The Parishes are separated by red lines.
Longitude West of Greenwich
To face p. 876
Stanford's Geographical Estab.t
London: Edward Stanford, 12, 13 & 14, Long Acre, W.C.



There is no Established Church, and the public schools, numbering in 1899 over 900, with an attendance of about 100,000, are all undenominational and supported by a Government grant of £54,000. Since the Jubilee rejoicings of 1887, when they discovered that they were citizens of a great empire, the natives have displayed much zeal for the education of the young, and numerous free, industrial, and denominational high schools are now well supported.

In 1896 the revenue (£615,000) exceeded the expenditure (£597,000) by £18,000. But there is a public debt of £1,516,000, chiefly incurred for such public works as roads, which are excellent, canals, bridges, and railways. In 1889 the railways opened for traffic had a total length of 186 miles, and in that year there was a balance of nearly £30,000 over the working expenses.

The military forces stationed in Jamaica number 1800 of all arms, besides a volunteer militia of about 400. There is a naval dockyard, coaling station, and victualling yard at Port Royal (Kingston), and this place, Rock Fort, Salt Pond's Hill, and some other points, are defended by fortifications and batteries.

CHAPTER XIX

THE LESSER ANTILLES

I. The Bahamas:—General Survey—Topography—Administration.
II. The Bermudas.
III. The Virgin Islands and Santa Cruz.
IV. The Caribbee Islands—Outer Chain.
V. The Caribbee Islands—Inner Chain:—British Leeward Isles—The French Caribbees—Guadeloupe—Martinique—The British Windward Isles—St. Lucia—St. Vincent—The Grenadines—Grenada.
VI. The Outlying British Antilles: Trinidad—Tobago—Barbados.

I. The Bahamas

General Survey

Although conventionally included in the West Indian world, the Bahama Islands, so named by extension from the northernmost member of the group lying nearest to the mainland, stand quite apart, presenting both in their physical characters and geological constitution the greatest possible contrasts to all the other groups except the short outer chain of the Lesser Antilles. Having the same south-easterly trend, and being of the same coralline formation, this chain might be regarded as belonging to the same insular system as the Bahamas, but for the abysmal waters of the Brownson Deep, by which all continuity is completely interrupted about the meridian of Puerto Rico.

West of the Deep a vast marine bed, known as the *Great Bahama Bank*, stretches for a distance of 780 miles in the direction of the Peninsula of Florida, forming the pedestal on which stand all the members of the archipelago. Opinions still differ as to the nature and origin of this submarine plateau, which is by some regarded as the result of slow upheaval in shallow waters, while others attribute it to the opposite process of subsidence. The latter view, first proposed by Professor A. Agassiz after long and careful studies made on the spot, seems at present to meet with most favour. The Bahama Bank is accordingly assumed to be a submerged range, which at one time formed part of the Antillean system, in outline and general disposition somewhat resembling the neighbouring island of Cuba. On this view the islands are neither igneous uplifts nor altogether coralline reef structures, but to a large extent the still exposed summits of a now vanished mountain range, which was disposed in its eastern section nearly parallel with the Great Antilles, but in the west curved round northwards in the direction of the mainland, in which it may have been originally rooted.

This general inference seems borne out by the physical aspect of the islands themselves, which are of a remarkably homogeneous character, very different from that of true upheaved coral reefs. They are all described by Agassiz as wind-blown heaps of shell and coral sands, which were at one time considerably more extensive than at present, their several areas having been reduced by a uniform recent subsidence of about 300 feet throughout the whole region. The result of the subsidence is that, while a few of the higher crests still rise from 100 to 200 and even 400 feet above sea-level, others are flush

with the water, and others, such as the *Silver Bank* and *Navidad Bank* in the extreme south-east, are almost completely submerged. The sands consist for the most part of the triturated remains of polyps and molluscs belonging to the same species as those still inhabiting the surrounding waters. Their dazzling white colour is relieved by the emerald tints of the vegetation on the wooded islands, and by the deep and lighter blue shades of the overhanging skies and encircling seas. Thus the charming effects described by all observers gliding along the labyrinthine paths of these countless insular groups are all produced by the vivid contrasts of the three prevailing colours—white, blue, and green—harmonised as Nature alone knows how to harmonise her diverse colour combinations.

The Lucayas, as the archipelago is also called from its long extinct Lucayan aborigines, comprise as many as 700 distinct islands and islets, besides some 2400 rocks, cays, and reefs of all kinds, or a total aggregate of considerably over 3000, with a collective area of about 5600 square miles. But all but about thirty are uninhabited, and the collective population, returned by the census of 1891 at 47,564, was estimated in 1899 at not more than 55,000—43,000 blacks and coloured, and 12,000 whites.

Of the inhabited islands about fourteen are described as "large," that is, have areas ranging from a little over 100 to 1500 or 1600 square miles. These are, taken in their order from north-west to south-east: *Bahama* and *Great Abaco*, separated by *Providence, North-East Channel* from *Eleuthera, New Providence*, and *Andros*, largest member of the archipelago; *Cat, Watling, Long*, and *Great Exuma*, separated by *Crooked Island Passage* from *Samana* (*Atwood Cay*), *Crooked Island*, and *Mari-*

guana; lastly, *Great Inagua*, the *Caicos* and *Turk* groups, beyond which the submarine plateau may still be traced through the *Mouchoir* and other submerged banks nearly to the eastern extremity of Hispaniola.

The Tropic of Cancer, which intersects Long and Great Exuma, divides the archipelago into two nearly equal parts—an extra-tropical section separated by Florida Strait and Santarem Channel from Florida and West Cuba; and an inter-tropical section, separated by the Old Bahama Channel and the Windward Channel from East Cuba and Hispaniola. But the two sections are not affected to any appreciable extent in their climatic and biological relations by their greater or less distance from the equator. In these respects the whole insular area is characterised by a remarkable uniformity, which must be largely attributed to the dominant influence of the Gulf Stream and the total absence of uplands, by which the atmospheric currents might be deflected from their normal trend.

Thus the climate is everywhere both cooler and more healthy, although subject to greater extremes of heat and cold, than the other Antillean groups. In the summer months, from May to October, the glass ranges fully ten degrees (75° to 85° F.), and in the so-called winter season, from November to April, even as much as fifteen degrees (60° to 75° F.) The mean of about 70° for the whole year indicates an absolutely perfect temperature, and this, combined with the soft marine breezes, which circulate freely over the low-lying insular groups, has begun to attract visitors from the less favoured mainland to the very region whither the Spanish pioneers had resorted in quest of the fabled "waters of rejuvenescence."

With a mean annual rainfall of 40 inches, somewhat evenly distributed, and supplemented by a saturated

atmosphere and underground reservoirs, Andros and some of the other larger islands had developed a forest vegetation containing several species, such as mahogany and pitch-pine, derived from the Great Antilles and the mainland. The pine groves still range as far south as New Providence, but the mahogany, which formerly abounded in many places, has been thinned out by the woodman's axe. These large forest trees, which flourished on a naturally poor soil, described even as "barren," helped in their turn to sustain several parasitic growths, one of which, the *Viscum ceryophylloides*, a member of the mistletoe family, possessed a certain economic value. After heavy rains it absorbed an extraordinary quantity of moisture, and when squeezed like a sponge yielded a considerable supply of potable water. Before wells were sunk, and the underground reservoirs tapped, this property was highly valued in a region which, beyond a few marshy rivulets in Andros, was entirely destitute of running waters. The indigenous flora has for the most part been supplanted by alimentary plants, such as cocoanut, oranges, pine-apples, grown entirely for the United States market. Unfortunately this industry is checked by the high tariffs, which weigh heavily on the agricultural prospects of the Bahamas, as of the other Antillean groups. In recent years the sisil hemp (henequen) has been introduced from Yucatan, and its cultivation is stimulated by Government aid.

With the exception of an opossum, which appears still to linger in some localities, the Bahamas were absolutely destitute of mammals at the time of the discovery. But bird life abounds, and the surrounding waters are well stocked with fishes, turtles, and especially molluscs of all kinds. Some of the shells are extremely beautiful, and highly valued by European cameo artists.

The edible shell-fish were a chief resource of the Lucayan aborigines, who had acquired great skill in diving through the deep Bahama waters for this perennial store of food. But the faculty proved their ruin. Finding neither gold nor the waters of life in an insular region which held out no other inducements for permanent occupation, the Spanish adventurers soon began to exploit the natives, whose sale had been authorised by King Ferdinand in 1509. The divers were all captured and transported to the Panama and other pearl fisheries, where they fetched high prices, and the process was continued until all the aborigines had disappeared in a very few years.

Then the islands were abandoned and never formally reoccupied by Spain. Hence after the settlement of the Carolinas, the group was naturally regarded as a dependency of the English colony on the mainland, although not permanently occupied till the year 1718. Long before that time, however, stations had been founded at various points, and especially in the somewhat central island of New Providence, which the buccaneers soon discovered to be most providentially situated at the convergence of two oceanic routes for preying on passing Spanish vessels.

Plantations were also laid out, and worked by slaves imported from all quarters. In the seclusion of their insular homes the freedmen, descendants of these plantation Negroes, have developed or preserved many peculiar physical and moral traits, so that the present black and coloured natives of the Bahamas present almost a greater variety of types than can elsewhere be found in the Antilles. Some speak "English" of the normal African style, some broad Scotch, and one group a pronounced Irish brogue, the different dialects corresponding to the nationalities of their owners in plantation days.

Others retain some of the special features, traditions, and usages of the West African tribal groups—Yorubas, Egbas, Ibos—of which their ancestors were members. We are told by L. D. Powles [1] that the tribal organisation is in a measure still retained, each commune electing its own "queen" every year, and yielding her obedience in the administration of local affairs. But all alike are now a quiet, law-abiding people, who give no trouble to the authorities, and live on friendly terms with their white fellow-citizens.

These whites themselves present some points of interest, and the marked physical degeneracy of most of them may be taken as an object lesson on the consequences of close alliances continued over several generations. In Great Abaco, which is densely peopled by nearly 4000, mostly descendants of the royalists who removed thither during the American War of Independence, intermarriage in small family circles has long prevailed, being due to the desire of preserving the racial purity, which would be sullied by miscegenation with the surrounding dark elements. But the result is a somewhat feeble folk, betraying in their weakened mental and bodily powers distinct symptoms of decay.

Topography

Although the archipelago was the first region in the New World sighted by Columbus, there are no stations in any of the islands dating from the Spanish period. A few temporary settlements were made, more for raiding purposes than with a view to permanent residence, and when there was no more raiding to be done all were abandoned. Hence the oldest, and still the most im-

[1] *The Land of the Pink Pearl*, 1888.

portant place, almost the only one worthy the name of town, is the English foundation of *Nassau*, which occupies a central position on the north side of New Providence. In colonial times Nassau, called also New Providence, was a nest of corsairs, who lived on the plunder of the Spanish Main, and during the War of Secession it became the chief resort of the blockade-runners, who carried on a contraband trade with the Southerners, at enormous profits and correspondingly heavy risks. Between 1861-65 nearly 400 vessels, laden mostly with cotton, made the trip, two days by steam, nearly all from Charleston and Wilmington, and of the 688 which sailed with miscellaneous cargoes from Nassau for the same seaports, 42 were captured and 22 run aground to escape capture. The harbour is merely a portion of the open roadstead, 16 feet deep, which is partly protected from the fury of the Atlantic gales and surf by *Hog Island*, a chain of reefs projecting like a breakwater westwards, and leaving a deep passage between its extreme point and *Silver Cay*. But the shelter is not sufficient to prevent the shipping from being occasionally strewn as wreckage along the neighbouring reefs.

Considerable interest attaches to *Cat Island*, both as the highest land in the archipelago (400 feet), and also because it was long supposed to be the point where Columbus made his landfall on 12th October 1492. *Guanahani*, the native name of the island in question, was renamed *San Salvador* by the discoverer. But owing to his confused account of his subsequent movements, and perhaps also to subsequent changes in the form of the island, there has been great difficulty in identifying this San Salvador; nor was the problem solved beyond doubt till quite recently. First the honour was transferred from Cat to the neighbouring

Watling, after which Cat, so named from some cats which were landed and allowed to run wild, long figured on the maps as *False San Salvador*. Then *Great Turk* and *Mariguana* were successively proposed, and so the matter remained till 1880, when the American navigator, G. V. Fox, plausibly suggested the islet of *Samana* or *Atwood Cay*, about midway between Watling and Mariguana, as the true San Salvador. Certainly Samana answers to many, but by no means to all, of the conditions, and its small size compared with the Guanahani of Columbus has always militated against its claims. Hence a return has been made to Watling, which Sir Clement Markham has in his *Life of Columbus* conclusively shown to be the real San Salvador.

Some years after the discovery the rumour was spread, one scarcely knows how or from what source, that the fabled life-giving waters, the "Fountain of Rejuvenescence," were running waste somewhere in the archipelago. The excitement caused by this report was comparable to that aroused by El Dorado himself, but did not last so long. Its quest, begun by Ponce de Leon in 1512, was soon brought to a close by his successor, Perez de Ortubia, who with infinite patience followed up the supposed clue to the *Bemini Reefs*, north-west of Andros on Florida Strait, and found—nothing.

Administration of the Bahamas

As seen in the last chapter, the Turks and Caicos groups are politically dependent on Jamaica. All the rest is constituted a separate Crown Colony with a Governor assisted by an Executive Council of 9, a Legislative Council of 9, and a Representative Assembly of 29 members. Seat of Government, Nassau; revenue (1897),

£62,754; expenditure, £63,405; debt, £119,000; imports, £186,000; exports, £150,000; shipping, 518,000 tons entered and cleared.

II. The Bermudas

Another Crown Colony, one of the smallest in the Empire, is constituted by the little insular group of the *Bermudas*, comprising about 360 islets, of which 18 or 20 are inhabited. They lie about 1000 miles north-east of the Bahamas, 580 miles east of North Carolina, and 680 south-east of New York, and have a total area of 20 square miles, with a population (1897) of 16,000 (6000 whites, 10,000 blacks and coloured).

Discovered in the year 1515 by the Spanish navigator, Juan Bermudez, the group was again forgotten until it was unintentionally rediscovered by Sir George Summers (Somers), who was cast away on these reefs in 1609.[1] Hence they were long known as *Summer's Islands*, popularly changed to *Summer Islands*, and again to Bermudas, when the Spanish sailor's prior claim had been placed beyond doubt. The expression "Summer Islands" was suggested by the glowing description of the group by the poet, Edmund Waller, who had retired thither with some other royalists during the Civil War. They were settled by James I. in 1612, and became an important naval and coaling station in 1869, when a huge iron dry dock, constructed at a cost of £250,000, was towed out from the Medway, and placed in a secure position in the chief member of the group.

[1] To the reports spread by Summers on his return are to be attributed the allusions made to the name, not only by Ben Jonson, who speaks of debtors running away "to the Bermudas" (*Devil an Ass*, iii. 3), but even by Shakespeare under the form of *Bermoothes* (*Tempest*, i. 2).

The islands stand on a marine bed 25 miles long, where they are crowded so closely together on the east side that many are connected by bridges or causeways with the hook-shaped main island. All are of coralline formation, and the group marks the northernmost range of the coral-building polyps. They are encircled, especially on the north and west sides, by fringing reefs which are still growing, but leave a few intricate passages wide and deep enough to admit vessels of the largest size. As in some of the Bahamas, the surface is broken here and there by dunes or hills which in places attain a height of 260 feet, and are formed of blown coral sands cemented by the action of rain into solid rock. Hence these heights, which present such a marked contrast to the flat, low-lying atolls of the Pacific Ocean, have been described as "petrified dunes." The slopes are almost everywhere clothed with a rich sub-tropical vegetation, in which the most characteristic form is the so-called "cedar," an odoriferous Juniper (*Juniper barbadensis*) from the Lesser Antilles, which supplies the wood for lead-pencils. Associated with this plant is a verbena (*Lantana odorata*), also from the Antilles, while the palm family is represented by the *Palmetto sabal* from Florida, and the superb *Oreodoxa*, also an exotic, which has been planted in avenues round about the capital.

Like the Bahamas, of which they may be regarded as remote outliers, the Bermudas enjoy a proverbially mild and equable climate, with a mean annual temperature of about 70° F. There is no doubt an absolute range of forty degrees (40° to 80°); but the glass rarely approaches either extreme, and in February, the coldest month, the average is as high as 60° or even 62°. The chief drawback is the absence of rivulets, and as the water of the "tidal wells" is slightly brackish, the

inhabitants have to depend for potable water mainly on the rains captured and husbanded in cisterns. Despite a poor soil the precipitation suffices to reward the husbandry of the market-gardeners, who raise considerable crops of "spring vegetables"—potatoes, onions, and lily-bulbs—for export to New York, with which there is regular steam service. The Bermudas are also connected by submarine cable with Nova Scotia, and another line has now been projected to the West Indies.

The Governor, who resides near the capital, *Hamilton* (population 1300), is assisted by an Executive Council of 6 members appointed by the Crown, a Legislative Council of 9, also appointed by the Crown, and a Representative Assembly of 36 members returned by an electorate, which in 1898 numbered 112 voters. Revenue (1897), £36,000; expenditure, £35,700; debt, £46,000; exports, £128,000; imports, £323,000; shipping (1898), 6120 tons. Owing to their important strategical position in mid-Atlantic, a strong garrison of about 3000 Imperial forces is maintained in the Bermudas.

III. The Virgin Islands and Santa Cruz

Politically the Lesser Antilles, called also collectively the Caribbee Islands, and by English geographers disposed in two divisions—the Leeward and the Windward Isles—are distributed amongst four European Powers —Great Britain, Denmark, France, and Holland. But the distribution is so involved, that all attempts to make any intelligent classification based on political considerations have necessarily ended in failure, if they have not added to the perplexity of the student anxious to obtain a clear and comprehensive view of this insular

microcosm. Thus, small as it is, the group now to be considered belongs partly to Denmark and partly to England, while negotiations have been for some time in progress which will probably result in the transfer of the Danish section to the United States for a sum of £500,000 or £600,000. As *St. Thomas*, chief member of the group, has ceased to be of any economic value to the Dane, and forms geologically an eastward extension of Puerto Rico, already flying the American flag, there might seem to be a certain fitness in the transfer. At least those American statesmen will think so who are aware that the whole cluster occupies perhaps the most central position in the Antillean system, of which it has been called the "keystone."

When first sighted by Columbus in 1494, the long procession of white surf-beaten fringing reefs appears to have suggested a fanciful resemblance to the 11,000 British maidens of the St. Ursula legend, and were accordingly named the Virgin Islands by the discoverer. They comprise the Danish islands of *St. Thomas* and *St. John*, with the outlying *Santa Cruz*, and *Virgin Gorda*, *Tortola*, *Anegada*, with numerous uninhabited reefs and rocks, belonging to England. All are exposed to the full fury of the cyclonic storms, during one of which, in 1867, all the shipping in St. Thomas harbour was either wrecked or driven ashore, with a loss of about 1000 lives. In the same year the group was much damaged by a violent earthquake, in which, however, few lives were lost.

Formerly the Danish islands were well cultivated, and, St. Thomas being a free port, were the centre of considerable commercial activity. But the abandoned plantations are now overgrown with a scrubby vegetation, consisting chiefly of lantana (sage bush), while St.

Thomas has become little more than a port of call. Symptoms of decay are everywhere conspicuous, and there are no signs of recovery from the economic ruin caused by the abolition of slavery. The great bulk of the inhabitants are descendants of the plantation Negroes, who till no land beyond what is necessary for bare existence. Very little Danish is spoken, the current speech being an English patois. The areas and populations, with historical and other details of these, as well as of all the Antilles, will be found tabulated in the Appendix.

IV. The Caribbee Islands—Outer Chain

By the expression Caribbee Islands is here to be understood the insular range which sweeps round in a graceful curve from the Virgin group to Grenada, and thus comprises both the Leeward and Windward Isles, as they are figured on most English maps. As pointed out in a previous chapter, the Leeward or northern section, terminating southwards at Dominica, consists of an outer and an inner chain, which present totally different physical characters, and should therefore be dealt with separately. Here also the political arrangement is perplexing, and consequently useless for systematic treatment. Thus the outer chain, which it will be convenient to deal with first, is partitioned amongst as many as three European states—*Sombrero*, *Anguilla*, *Barbuda*, and *Antigua* being British; *St. Bartholomew*, *Deseada*, and *Marie Galante*, French; and *St. Martin*, partly French and Dutch. Even a fourth Power was here represented so recently as 1887, when Sweden ceded St. Bartholomew, her last foreign possession, to France for the sum of £11,000.

All the members of the outer chain are mainly of marine origin, having been raised above the surface by the coral builders working on the submerged plateau which projects eastwards from the inner chain. They consequently belong rather to the coralline system of the more remote Bahamas than to the neighbouring groups, which are of volcanic and possibly even to some extent of continental origin.

An exception, however, should be made in favour of Antigua, which is the central link in the chain, and partly of igneous formation, hence the most productive member of the system. It was, in fact, at one time the most valued of all the British possessions in the Lesser Antilles. *Royal Harbour* on the east side was the chief naval station during the French wars, and *St. John* on the opposite side is still the capital and residence of the governor and commander-in-chief of the colony of the "Leeward Islands," with a population (1899) of over 10,000. Consisting in the north of rolling limestone plains, Antigua develops in the south a mountain system of old volcanic tuffs densely clad with rich forest growths, and culminating in the Shakerley Peak, 1500 feet high. Most of the island is still under cultivation, but the people, both the English planters and the blacks, continue to rely mainly on the sugar crop in the face of falling prices and the crushing competition of bounty-fed beet-sugar. Hence, despite an outward appearance of comfort, neat farmsteads and good, well-kept roads, the symptoms of inevitable decay are obvious to those who look below the surface. The tenacity with which most of the inhabitants of the Lesser Antilles persist in clinging to a single crop recalls the exclusive faith of the Irish farmers in the potato plant before the famine, and if adhered to may lead to the same widespread ruin.

"England has done all within her power to give this island civilisation; but, with the decrease in the price of sugar, government expenditures have rapidly grown, owing largely to the attempts to improve the harbour; and the public revenue is now far less than the expenses. If the sugar industry fails, the future of Antigua will be more gloomy than that of the other islands, its liability to droughts and hurricanes greater" (Hill, p. 325).

REDONDA AND NEVIS.

Most of the other members of the outer chain, consisting mainly of white limestone and coral-reef rock, seldom rising more than about 200 feet above sea-level, present much the same general aspect as the Bahamas, of which, despite the intervening Brownson Deep, they may be regarded as a south-eastern prolongation. One of the largest is *Barbuda*, a dependency of Antigua, which is very flat, with a large lagoon on its west side. It exports salt and about 7000 tons yearly of phosphate

of alumina, obtained from the rich deposits in the rocky islet of *Redonda* between Nevis and Montserrat.

Next in importance to Antigua is *St. Martin*, which, despite its diminutive size, enjoys the distinction of being shared between France and Holland by an amicable arrangement dating as far back as the year 1638. It also towers above all the other coralline islands in the *Paradise Peak*, which has been upheaved to an altitude of 1920 feet. In the neighbouring St. Bartholomew another limestone summit attains an elevation of 1000 feet, so that the current statement regarding the low flat character of the outer chain is subject to more than one serious exception. Apart from its dual rule, the social relations in St. Martin are peculiar. The inhabitants, mostly coloured, are largely immigrants from British possessions, who now outnumber both the Dutch and French settlers. Thus the curious phenomenon is presented of an island less than 100 square miles in extent owned partly by France, partly by Holland, while the bulk of the inhabitants are of English speech.

V. The Caribbee Islands—Inner Chain

While the coralline outer chain extends no farther than about 16° S. lat., the volcanic inner chain continues to develop its curvature to within measurable distance of the South American mainland. To the uniform physical character of this chain corresponds a certain political unity, all the members of the system being British except the two large French islands of Guadeloupe and Martinique, and the islets of *Saba* and *St. Eustatius*, which are Dutch. But even here the political arrangements, and especially the official nomenclature, are somewhat confusing, all the British possessions

being disposed in two administrative divisions, which are respectively named the "Leeward" and the "Windward Isles," although all alike are windward. Nor is any account taken of their different physical constitution, so that the whole of the outer chain is included in the Leeward division. Owing to this conflict between the physical and political relations, it will be convenient here to give the two British Crown colonies in tabular form, although some of the particulars recur under a different arrangement in the general Appendix :—

	Area in sq. miles.	Pop. 1881.	Pop. 1891.
Leeward Isles.			
Antigua	108	34,964	36,819
Barbuda and Redonda	62		
Virgin Islands	58	5,287	4,639
Dominica	291	28,211	26,841
St. Kitts	65	29,137	30,876
Nevis	50	11,864	13,087
Anguilla	35	3,219	3,699
Montserrat	32	10,083	11,762
Total	701	122,765	127,723
Windward Isles.			
St. Lucia	233	42,504 (1888)	47,332 (1897)
St. Vincent	132	46,872	41,054
Grenadines	86	5,154	6,000
Grenada	133	49,337 (1888)	61,229 (1897)
Total	584	143,867	155,615

British Leeward Isles

When it is considered that here, as in all of the Lesser Antilles, the great majority of the natives are blacks or coloured, who are naturally prolific, the slight increase, or even in some places actual decrease, of the population from decade to decade, betrays of itself the

economic blight which has fallen upon this insular world ever since the enforcement of the Abolition Act. As the African is here also in a suitable environment, and might, with a moderate display of intelligence and enterprise, have maintained if not added to the prosperity of plantation times, it is difficult to avoid the inference that to racial far more than to economic causes must be attributed the general depression. It has, of course, been contended that, where such slight efforts suffice for existence, there is no particular reason why the freedman should unduly exert himself, and voluntarily undergo that bodily fatigue which to him must now seem a work of supererogation. But that simply means that, left to itself, the race is satisfied with bare existence, prefers stagnation to the strain needed to improve its material condition, and will therefore not spontaneously contribute to the sum of human progress.

But an inquiry into the present state of this "Garden of Eden" will show that there are degrees in this picture of general apathy, just as there are degrees and endless transitions between the pure white and black stocks in the extremely mixed populations of the islands themselves. Thus, MONTSERRAT between Guadeloupe and Nevis, while still growing sugar, has developed a new industry, and now exports considerable quantities of lime-juice, which has already become a popular summer beverage in England. Like nearly all the members of the inner chain, Montserrat is covered with lovely forest-clad hills, and even mountains rising in the *Soufrière Peak* to a height of 3000 feet. On the other hand, NEVIS yields nothing but sugar and salt, although there is much fertile land on its wooded slopes, which occupy the whole surface, leaving no space for glens or valleys, and attaining an extreme altitude of 3200 feet.

The neighbouring ST. CHRISTOPHER, familiarly called ST. KITTS, is still more lofty, *Mount Misery*, its solitary peak, being 3700 feet high. This was evidently an old crater, its gently sloping forest-clad flanks being formed of ancient lava streams deeply furrowed by the running waters. Hot springs, which still emit sulphurous vapours, occur in several districts. Some historic interest attaches to St. Kitts as the first land settled by the English in

MOUNT MISERY, ST. KITTS.

the American Mediterranean. The occupation dates from 1623, but its exclusive possession was long disputed by the French, and the present capital, *Basseterre*, as indicated by its name, was founded by them.

DOMINICA, southernmost of the English Leeward group, lies between the two French islands of Guadeloupe and Martinique. Its isolated position is explained by the fact that it originally belonged to France, but was captured by the English in 1756, and ceded to them by

the Treaty of Versailles (1783). It is the largest and perhaps the most picturesque of all the English Caribbees, with bold precipitous coasts and the superb *Morne Diablotin*, culminating point of the Lesser Antilles (5314 feet). Several sulphurous hot springs reveal the igneous origin of this cone, down which many foaming torrents rush seawards during the rains. The neighbouring

MARKET PLACE, ROSEAU.

Grand Soufrière is even still an active volcano, and so recently as 1880 was the scene of an eruption which covered the houses of the capital, *Roseau* (*Charlotte Town*), with scoriæ and ashes to a depth of two or three inches. In the same year several landslips took place, causing much damage, and greatly reducing in size a lovely crater-like lake on the flanks of the Morne Diablotin, which before that time was flooded with boiling water,

and every five minutes discharged a foaming geyser—a phenomenon almost unique in the New World.

The prospects of Dominica cannot be called bright, although by no means so gloomy as they have lately been depicted by some writers of repute. The exports of sugar, rum, and molasses have, no doubt, greatly fallen off, and the planters have almost given up the hopeless struggle to compete with the beet-sugar growers. But it is one of Froude's exaggerations to assert that they have been struck with paralysis. On the contrary, they have now wisely turned their attention to other sources of wealth, such as cacao, limes, lime-juice, and essential oils. Although many of the natives have emigrated, especially to Cayenne and Venezuela, there has been a small increase in the population during the last ten years, while the exports have not declined, as has been stated, but advanced from £39,000 in 1895 to over £47,000 in 1897. In the same year the shipping was over 407,000 tons; the revenue more than covered the expenditure, and the public debt fell short of £71,000, which compares favourably with St. Lucia (£192,000), Antigua (£150,000), and especially Guadeloupe, which continues to make a yearly demand of about £45,000 on the home budget.

The French Caribbees

GUADELOUPE and MARTINIQUE, with their little dependencies, *Deseada* and *Marie Galante* in the outer chain, are all that now remain to France of her numerous West Indian possessions of the seventeenth and eighteenth centuries. They are, however, the largest, if not the most flourishing of the Lesser Antilles, where they occupy with Dominica a commanding central position. Here are some of the broadest and most easily navigated

passages, giving access from the Atlantic to the inland waters, and through these passages the Caribbean Sea and Gulf of Mexico receive, perhaps most of that portion of the Gulf Stream which penetrates through the insular chains into the American Mediterranean.

But, despite the introduction of coolie labour, these otherwise favoured lands have not escaped, or at least have not yet recovered from the disastrous consequences of the too sudden suppression of slave labour. They are at present passing through a severe economic crisis, mainly due to their persistent reliance on their former sources of wealth, sugar and rum. In the hopeless struggle with rival producers, and especially with the bounty-fed beet-sugar of France itself, their trade has fallen off by one-third during the two decades between 1873 and 1893.

In recent years efforts have been made to restore the prosperity of the islands by substituting other produce, such as bananas, pine apples, cocoa, and tobacco for cane-sugar, but hitherto with but partial success. The chief obstacle is, perhaps, the heavy duties imposed on such imports by the United States, their nearest and largest market. England is well supplied with such commodities from her own colonies and other inter-tropical lands, while more regular and frequent steam service with the mother country would avail little so long as she also, like America, persists in a protectionist policy. But even so, France does take a considerable quantity of the produce of these islands, which in any case are not in a worse plight than the British groups. "There is no appearance of that abject poverty and incessant begging which meet one at every turn in the English possessions. People have an air of thrift and self-respect, which finds expression in the cleanliness and the taste displayed in

their dress, streets, houses, and customs. These French islands also excel the others in agricultural development, and in the midst of the general Caribbean industrial depression show at least some signs of vitality" (Hill, p. 337).

Guadeloupe

Although usually spoken of as a single unit, Guadeloupe really consists of two islands of nearly equal size, united by a narrow isthmus which is traversed by a marine channel, the *Rivière Salée*, about 300 feet wide, and accessible to vessels drawing seven or eight feet of water. The eastern island, where stands *Pointe-à-Pitre* at the southern entrance of the channel, bears the name of *Grande Terre*, although smaller and lower than *Basse Terre* ("Low Land,"), as the western member of the group is called. But the latter was probably named from the capital, *Basse Terre*, which stands on the coast near the southern extremity of the island. Basse Terre is entirely volcanic, and traversed by lofty wooded ridges, culminating southwards in the volcano of *La Soufrière* (4900 feet), which still discharges sulphuretted hydrogen. A deep fissure in the centre contains the sulphur beds whence the mountain takes its name, while numerous hot springs continue to well up on the outer slopes. At several points round the coast the polyps are incessantly at work, causing the land to encroach seawards, and giving rise not only to living reefs, but also to those curious limestone masses called *maçonne-bondieu*, derived from blown sands and comminuted shells, in which all manner of objects, flotsam and jetsam, get embedded and rapidly petrified. It was in conglomerates of this kind that were discovered the famous Carib skeletons, known as *anthropolites*, that is, "stone men," one of which is

preserved in the Natural History Museum, South Kensington. Another in the Paris Museum wears a modern neck ornament, and from the same rocks have been obtained recent pottery and the skeleton of a European dog. The animal remains are thus shown not to be true fossils, nor indeed of any great age, although they were at one time appealed to as undoubted evidence of the vast antiquity of man in the New World.

When Guadeloupe fell to the English in 1794 the slaves were manumitted; but when restored to France in 1802, together with Martinique, in exchange for St. Lucia, the attempt to revive slavery led to dire results. Many of the freedmen committed suicide, and 400 blew themselves up in a fortress rather than surrender. Then followed massacres and transportations to Europe, where thousands perished in the Napoleonic wars. In 1848 came the final redemption, and the freedmen of the French islands are now noted for their buoyant spirits, as forgetful of the past as they are heedless of the future. Their improvident ways and lack of the moral sense they share with their kindred everywhere, for these are essentially racial characters.

Martinique

A halo of romance hovers round *Martinique*, most picturesque of the Caribbees, and, next to its sister, Guadeloupe, the largest member of the group. In altitude also it takes a foremost place, the central peak, *Mount Pelée* (4428 feet), being over-topped only by two others in the Lesser Antilles. The triple-crested *Carbet* on the north side falls a little lower, while one or two others towards the south approach 4000 feet. All are clothed with dense woodlands, which range down their slopes to the intervening valleys, as if the whole surface

were spread with a carpet of verdure following all the billowy foldings of the relief, and presenting a picture of perennial vegetation, which for endless variety of forms and majestic forest growths is not to be surpassed in any tropical land. Here are gathered in the space of 200 or 300 square miles, as in a natural botanic garden, choice specimens of all the most characteristic species dispersed over the surrounding continental and insular worlds. Here are evergreen oaks, cedars, mahoganies, silk-cotton, ironwood, palms, all crowded together, interlaced by climbers of prodigious coil, strangled almost and overburdened with parasites of huge growth, trees grafted on trees, the whole so matted and intertwined that in the struggle for a little light and air many are fain to assume unwonted forms. The palms especially are seen to strain their necks, as it were, and to acquire an enormous length in their efforts to overtop their rivals, and thus bathe in the life-giving sunshine.

Even the fauna, elsewhere so monotonous in its ever-recurring forms throughout the Antillean groups, has here its special types of insects, lizards, snakes, and other reptiles. Amongst these is the much dreaded *fer-de-lance* ("spear-head"), a venomous serpent six or seven feet long, which lurks in the woods, the fields, and gardens, and springs to a great distance in pursuit of its prey. The *Bothrops lanceolatus*, to give it its scientific name, is a species of rattlesnake, whose tail is tipped with a horny spike (the spear-head), and is also armed with four full-grown fangs, and four in a rudimentary state to take the place of the others when worn out. Hence it is not surprising that the mongoose was killed by fer-de-lance, and not fer-de-lance by the mongoose, when introduced some years ago to rid the island of this formidable pest.

Martinique may be described as a relatively prosperous colony, and much of its prosperity appears to be due to a wise provision of the French Government, which checks the exclusive cultivation of the sugar-cane by giving a small bounty for every coffee and coco-tree planted.

On the leeward side of Martinique are two important places—*Fort-de-France*, the capital and chief French

ST. PIERRE, MARTINIQUE.

naval station in the West Indies, and *St. Pierre*, quite a large town with a population of over 25,000, described by Hearn as "the quaintest, queerest, and prettiest withal, among West Indian cities; all stone-built and stone-flagged, with very narrow streets, wooden or zinc awnings, and peaked roofs of red tile, pierced by gabled dormers." Here was once a beautiful botanic garden, now a wreck, ruined by official neglect and mismanagement.

The natives of Martinique, a strange and hetero-

geneous mixture of white, black, and Carib, are stamped amid every variety of colour and type by a strong individuality, by which they may be recognised anywhere. Even the full-blood Negro and especially the Negress seem to be like no other full-blood blacks. They are softer, less repulsive and brutal, with an indescribable something French about them, due no doubt to association, dress, and the brilliant colour harmonies in which they revel. The prevailing tint is a yellowish brown, and many of the half-breeds—Mulatoes, Copres, Chabins, Matés—may be called beautiful after their kind. Their straight figures, graceful carriage, well-balanced head which supports all burdens, and piquant air, have a certain fascination which impresses all observers. "Fantastic, astonishing," exclaims Hearn—"a population of the Arabian Nights. Straight as palms, and supple and tall, these coloured women and men impress one powerfully by their dignified carriage and easy elegance of movement. Perhaps the most novel impression of all is that produced by the singularity and brilliancy of certain of the women's costumes. Some of these fashions suggest the Orient; they offer beautiful audacities of colour contrast; and the full-dress coiffure is most striking." Symmetry of form is a general endowment, and many of both sexes might serve as ideal models for the classic sculptor. But to probe too deeply would yield results more curious than edifying.

The British Windward Isles—St. Lucia

ST. LUCIA, northernmost of the Windward Isles, is distant 24 miles from Martinique, and 21 from St. Vincent, the next member of this group going southwards. It is perhaps the loveliest of these southern gems, and greatly resembles Martinique in its glorious

wooded uplands. In *La Soufrière*, the culminating cone, it attains an altitude of 4000 feet, while the *Piton des Canaris* is 3000, and other summits from 2600 to 2700 feet high. Some of these are typical instances of the remarkably steep conformation which is characteristic of so many of the Caribbee mountains. But although sloping at angles of 50 or even 60 degrees, all are densely wooded, and thus present at a distance somewhat the

THE PITONS OF ST. LUCIA.

appearance of artificial pyramids painted green. The superb forest growths find ample support in the extremely rich igneous soil, which is derived from old tuffs, basalts, and other ejected matter, and is bound together by the sinuous roots of the large trees.

But despite this fertile soil, and the advantages of a firm but equitable administration, St. Lucia long showed symptoms of the same economic decline by which so many of the other English Caribbees are smitten. Sugar,

for a time scarcely grown at all, has not been replaced by other more profitable cultures, so that most of the plantations are reverting to the wild state, while the natives either emigrate or seek a precarious employment about the coaling stations or on the public works. But since about 1895 the agricultural relations seem to have undergone some improvement. The exports rose from £39,000 in that year to £88,000 in 1897, and they included sugar to the value of £60,000, and cocoa £17,000.

Castries, the chief town, occupies an admirable position on a thoroughly protected land-locked inlet, which, when the works now in progress are completed, will rank amongst the most formidable citadels in the world. It is the chief coaling station of the British navy in the West Indies, and most of the Imperial forces are concentrated here and in Jamaica. In the neighbouring waters was fought the memorable and decisive engagement known as "Rodney's Victory," in which the great captain annihilated the French fleet under De Grasse on 12th April 1782. This battle decided in favour of England the struggle for supremacy in the West Indies, and immediately transferred St. Lucia to that Power. The natives, however, still speak the French patois which they had acquired during the rule of their former masters. They even rose in arms against the transfer, and it required an expedition of 12,000 men, under Lord Abercrombie, to reduce them to order.

St. Vincent—The Grenadines—Grenada

Except that it presents more extensive open views over its slopes and valleys, and also betrays clear indications of recent volcanic action, ST. VINCENT differs little

in its physical aspects from its neighbours. But of all the Antillean lands it is perhaps the most igneous, and certainly the most subject to underground disturbances. *Morne à Garou*, the highest summit in the island (4000 feet), is still an active volcano, and in 1812 its vast crater was the scene of a tremendous explosion, which utterly ruined the greater part of the plantations. The neighbouring *Soufrière*, also an active cone, 3000 feet high, belched forth dense volumes of dust, which turned a whole day into night, and spread over an area of 100 miles. The very contour of the island was modified, and, as at Krakatoa, a portion of its eastern end was blown away. Then was formed the present crater, which is nearly 2 miles round, and is now flooded by a beautiful lake 500 feet deep, and enclosed by rocky walls 800 feet high.

St. Vincent has not recovered from the general depression, and although it continues to export some sugar and rum, besides cacao, spices, and arrowroot, trade suffers from foreign competition and high tariffs in the United States. *Kingston*, the capital, with a population of about 8000, extends along a lovely bay on the south-west coast, with an amphitheatre of wooded hills rising gradually in the background.

The Caribs, who were in possession of so many of the Lesser Antilles at the time of the discovery, survived longest in St. Vincent. Indeed a small group still lingers on the island; but the great body, numbering some 5000, had become so troublesome to the settlers that they were deported in 1796 to the islands off the coast of Honduras (see above).

Beyond St. Vincent the inner chain is no longer formed by a series of separate links with intervening open channels, but by several hundreds of reefs, rocks,

and islets, which are collectively called the GRENADINES, that is, the "Pomegranates," and extend all the way to GRENADA, terminal member of the whole system. "On leaving St. Vincent," writes Charles Kingsley, "the track lies past the Grenadines. For 60 miles long low islands of quaint form and euphonious names rise a few hundred feet out of the unfathomable sea, bare of wood, edged with cliffs and streaks of red and grey rock, resembling the Cyclades of the Grecian Archipelago. Their number is about three hundred. The largest is not 8000 acres in extent, the smallest about 600. A quiet, prosperous race of little yeomen, besides a few planters, dwell there; the latter feeding and exporting much stock, the former much provisions, and both troubling themselves less than of yore with sugar and cotton. . . . They (the Grenadines) had been, plainly, sea-gnawn for countless ages, and may, at some remote time, have been all joined in one long ragged chine of hills, the highest about 1000 feet."

These eroded islets may be said to resume their pristine form in the beautiful island of *Grenada*, a great mass of igneous cones, which form a wonderful setting to a still more wonderful lakelet over 2 miles round, and no less than 3200 feet above the sea. North-west of the capital, *St. George*, stretch continuous chains of conical hills or ridges covered with great forest growths, and diversified with many pleasant dales and rippling streams. In 1762 Grenada passed from the French to the English, and is now the seat of government of the Windward Isles. Very little sugar, for which it was once famous, is now grown, and at present cacao and spices are the staple products. But the island is fairly prosperous, and densely peopled with a happy African peasantry—freeholders who grow their own yams and batatas, and contribute perhaps a little to the exports,

from which Grenada claims to be "The Spice Island of the West." Mr. J. B. Harrison, who has carefully studied the soil and climate, thinks that coffee and tobacco might be added to the present staples in Grenada, and sisil hemp in *Carriacou*, one of the largest and highest (600 feet) of the Grenadines.[1]

VI. The Outlying British Antilles

Trinidad

These three sporadic members of the Antillean world are here grouped together, not merely as a matter of convenience, but because they should be studied together, as probably belonging to the same geological system. That Trinidad at one time formed part of the Venezuelan mainland, with which it must soon be again connected by silt deposited by the Orinoco in the Gulf of Paria, is pointed out in the volume of this series dealing with South America. Nor is there any reasonable doubt that at no very remote period Tobago formed continuous land both with Trinidad and Barbados. The three islands are disposed in the direction of the north-east, so as to form an arc of a circle, which, if developed, would sweep round to the Florida Peninsula, and be almost mathematically concentric with the outer and inner chains of the Lesser Antilles. Thus it is no violent assumption to suppose that they represent all that now remains above water of another submerged Antillean range which, like the inner chains, at one time bridged the oceanic waters now flowing between the northern and southern continents.

Trinidad, largest of all the Lesser Antilles, has the

[1] *Geograph. Jour.* Feb. 1898, p. 183.

form of a somewhat regular quadrilateral, with two western peninsulas projecting, like those of Hispaniola, in the direction of the mainland. The surface is almost everywhere level or undulating, except in the north and south, where the Venezuelan coast ranges are prolonged through both peninsulas to *Galara* and *Galeota Points*, at the north-eastern and south-eastern angles of the square. The northern and more elevated ridge forms a direct continuation of the hilly Cumana Peninsula, and on both sides of the Gulf of Paria the geological features are the same — igneous and metamorphic masses of compact argillaceous schists, which slope gently inland, and present their steeper escarpments towards the sea. In the *Tucutche Peak* (Las Cuevas) the north coast range attains its greatest elevation (3100 feet), which is the culminating point of the island. The central plains are broken only by the isolated *Mount Tamana*, a little over 1000 feet high, while the ridge skirting the south coast, consisting of dunes and Tertiary rocks, like the chain of heights on the northern margin of the Venezuelan llanos, has a mean altitude of scarcely more than 500 feet. Its highest summit, *Mount Naparima*, near the town of San Fernando towards the neck of the southern peninsula, rises barely 600 feet above sea-level.

In the same south-western district occurs the famous *Pitch Lake*, which, although scarcely more than 90 acres in extent, is one of the most remarkable bituminous deposits on the globe. It is reached from the port of *La Brea*, which place is itself everywhere saturated with pitch. The very ship anchors in pitch; the passengers disembark on a pitch wharf; pitch lies heaped up far and wide in the harbour; in whatever direction the eye is turned it lights on nothing but pitch; pitch and the

current market price of pitch are the one burden of conversation. A more wretched place to live in it would be difficult to imagine, and the few Europeans condemned to reside here even for a short time suffer much from ague; even the Negroes fail to become acclimatised to the baneful atmosphere of the place.

The road from La Brea to the lake, scarcely a mile and a half long, crosses an utterly desert tract, all the timber formerly growing here having been either cut down or used up as fuel. At first sight it looks like any other woodland lake. Its margins are overgrown with tufts of grass and sedge, while the prospect is varied with several wooded islands studding the basin. But the illusion is soon dispelled by the colour and consistency of the fluid, which is nearly everywhere strong enough to bear your weight, and looks as if it had just been swept clean with a besom. The whole surface is rent by clefts and fissures, one might almost say ravines and chasms, where the asphalt, evidently oozing up from various underground centres, has failed to merge in a single compact mass. These fissures vary from a few inches to several yards in depth and extent, and are at times flooded by water, where one observer noticed a fish weighing about a pound, although it was difficult to understand how it could exist in an element so saturated with sulphur and bituminous substances.

Crossing the clefts either on the back of a gigantic Negro or on planks thrown over them, the explorer reaches the opposite side, and thence in a few minutes the edge of the wood, where are seen the so-called "pitch volcanoes"—little hillocks scarcely 2 feet high, with a central vent about 18 inches round. In all these craters the pitch is still in a liquid state, here and there welling up to the rim, often even overflowing, but gener-

ally at a level of less than 2 feet below the margin. In some places it has the consistency of treacle, and is of a light brown colour. Slight explosions of gas are constantly taking place, followed by noxious exhalations from the seething mass, and accompanied by little trickling streams of water and opalescent air-bubbles. Petroleum also occurs at many points in the same district.

But amends are elsewhere made for this plague-spot, and in Trinidad the traveller's gaze is delighted with some of the loveliest sylvan prospects anywhere to be seen in the Antilles. "About half an hour's walk from the town," writes Mr. Hastings Jay, "brings one to the banks of a beautiful river in the forest. Silk-cotton trees, with tall, stately stems rising to a height of 100 feet before the lowest branch is reached, tower above the throng of bread-fruit trees, mangoes, tamarinds, bamboo, coffee, and cocoa-trees, which grow in a dense and well-nigh impenetrable tangle around them. The ground is covered with all kinds of magnificent ferns, wild palms, grasses, and innumerable species of undergrowth, whilst masses of creepers cover even the tallest trees, climbing the trunks, and spreading over the branches, then falling in festoons to the ground. Through all this wealth of gigantic vegetation the river winds, now very little more than a brook rippling over the stones with a cool, refreshing sound, but often rising some 20 feet in a few hours, and becoming a roaring torrent. Sitting on a rock at the side of the water, I gazed long upon the scene before me. Some coolies were bathing in a beautiful pool at the bend of the river, their bronze colouring making a fine contrast to the green of the forest behind them. Meanwhile dragon-flies of all colours are whirling about in the air, and skimming over the surface of the water. Gorgeous butterflies,

two or three times the size of any to be seen in England, flutter past incessantly. Humming-birds, hardly any

BREAD-FRUIT TREE.

larger than butterflies, with plumage of a brilliant emerald green, fly from branch to branch, sucking the

honey from the blossoms. Little fishes innumerable are darting about in the pools."[1]

Thanks to the variety of its resources—sugar, cacao, coffee, asphalt, trade—Trinidad has felt the general depression less than most of the other British possessions. The yearly exports average about £2,000,000, and include such items as cacao (£605,000 in 1898), sugar (£537,000), molasses (£17,000), Angostura bitters, cocoanuts, and asphalt. Nearly 60,000 acres are still under

HARBOUR, PORT OF SPAIN, TRINIDAD.

sugar-cane, and 100,000 under cacao and coffee, while the pitch lake is leased to an American company, which in 1898 exported 125,000 tons, and contributes a yearly sum of about £30,000 to the public revenue, which rose from £552,000 in 1895 to £570,000 in 1898. One of the chief sources of wealth is trade, of which the capital, *Port of Spain*, on a fine harbour facing the Gulf of Paria, has become a great centre. This rising seaport, which is regularly visited by a large number of steamers

[1] *A Glimpse of the Tropics*, 1900.

from England, France, Holland, and the United States, has entirely eclipsed St. Thomas as a distributor of European and American wares throughout the West Indies and Venezuela. With the neighbouring republic it has developed an extensive carrying business, conducted by coasters and river steamers, which ascend the Orinoco for hundreds of miles to the Narrows, and bring down gold and other commodities, which are reshipped at Port of Spain for Europe. The Government House, a princely residence at the foot of the neighbouring hills, is surrounded by beautiful botanic gardens, rich in nutmeg, cinnamon, and other spice-trees, and adorned with stately ceibas, flowering almonds, and orange-groves.

The prosperity of Trinidad is also largely due to the excellent system of contract labour, under which as many as 100,000 coolies have been introduced almost exclusively from India. They are protected by vigilant inspection from all injustice, are engaged under equitable terms for five years, and then reshipped free of charge to their Indian homes. But many prefer to renew their engagments, and even to settle permanently in the island, keeping quite aloof, and especially avoiding all union with the blacks, who constitute the great majority of the population. It is noteworthy that this system of apprenticeship is much the same as that which prevailed before the Revolution in the American colonies, where many poor people from the British Isles were indentured to the southern planters.

Tobago

TOBAGO, properly TABACO, that is, not the "weed" (*cohiba*), but the Carib pipe with which it was smoked, lies some 20 miles from Trinidad, and consists of a

single mountain mass, mainly igneous, rising in the centre to a height of 1800 feet, and everywhere falling at a moderate incline down to the coast. About two-thirds of the slopes, which are here and there diversified with pleasant hills and vales, are still clothed with primeval woodlands, including much valuable close-grained timber.

The agricultural outlook has somewhat brightened since the great sugar crisis of 1885, and cane-growing is now mostly replaced by tobacco, cotton, and stock-breeding. The soil and climate seem well suited for horse and sheep farming; but no real improvement is yet apparent, and the exports fell from £10,500 in 1895 to £4680 in 1897. There is also a debt of about £10,000. Tobago is one of those islands which claim to have furnished De Foe with the materials of his *Robinson Crusoe*.

After the first Dutch settlers were driven out by the Spaniards, it was reduced to a solitude visited only by a few passing mariners. One of these having been stranded on its deserted shores was afterwards brought away and, as is stated, supplied De Foe with a number of incidents, which he worked into his world-famed story. This is possible, and not necessarily in conflict with the prior claims of Juan Fernandez. Later more Hollanders arrived from Flushing, and also some Courlanders sent thither by James I. of England. These quarrelled, and the "Fishilingos," as the Flushingers were called, having ejected the men of Courland, placed their little estate under the protection of Louis XIV. (1662), the founder of the settlement assuming the French title of "Baron de Tobago." But the Grand Monarch proved a "King Stork," and ordered all the Dutch stations to be destroyed because they had harboured some unfortunate Huguenot

refugees. The result of all this chaos was that the English took possession, and to them the island was ceded by the Treaty of Utrecht (1763). Then came the "Thirty-six Months' Scotchmen," a kind of white coolies brought over by the planters free of charge in return for thirty-six months' unpaid service. This was followed by the expulsion of the French (1793) and the transfer of their estates to the English planters, from whom nearly the whole domain gradually passed to the African freedmen after the emancipation. Such is the remarkable contribution made by the little island of Tobago to the checkered history of the West Indies.

Tobago is one of the few places outside Jamaica where the pimento (allspice) grows wild. Here it is protected by a confederacy of parrokeets, who feed on the berry, and combine to ward off all other bird intruders from the thickets.

Barbados

BARBADOS, a gorgeously green island rising over 1000 feet above an intensely blue ocean, and canopied by equally blue skies, reveals in its physical characters its original connection both with Trinidad and with the Antillean geological system. With Trinidad it has in common those bituminous pits, which are here called *manjak*, and yield a kind of "petroleum" known as Barbados tar, used, however, not for lighting, but for medicinal purposes. In its physical constitution it is an epitome of those members of the Antillean system which consist of early Tertiary sedimentary rocks, largely overlain by later limestones of marine origin. "Barbados," says Mr. Hill, who speaks here with special knowledge, "consists of a nucleus of folded and crumpled clays and

gravels of Eocene age, like the older sedimentaries of the Antilles, derived from some unknown land of the past, accompanied by thick layers of white marl and radiolarian earth of deep oceanic origin. Over the whole, like the rind of a melon, there is a thick veneering of calcareous coral rock, made up of gigantic coral heads consisting of reefs like those now growing around the island, which have been gradually elevated to their present height above the waters" (p. 374). Thus, as everywhere in the American Mediterranean, there has been an alternate process of subsidence, by which the "unknown land of the past" has disappeared, and of upheaval, by which the dazzling white coralline limestones have been raised in places hundreds of feet above their original sea-level.

Barbados, hitherto a derelict adrift amid the Atlantic waters, may now again take its place in the West Indian world, of which it is one of the brightest gems. It enjoys a delightful climate, comparable to that of the Bahamas and Bermudas, and partly due to the same easterly trade winds, which are purified during their passage over the broad expanse of the ocean, but in this low latitude scarcely bracing enough for the European constitution.

In its general relief Barbados resembles Tobago, consisting of a single elevated ridge, which culminates towards the centre in *Mount Hillaby* (1100 feet), and thence falls through a series of low terraces on all sides seawards. So gentle is the incline that in a carriage drive along the well-constructed roads the ascent is scarcely perceptible. The island has no natural harbours, and only a small creek or inlet on the south-west coast, which is accessible to vessels of light draught. Here is situated the capital, *Bridgetown*, which has become a busy trading centre, port of call for several ocean

liners, and headquarters of the Royal Mail Steamship Company.

Barbados is one of the most densely peopled spots on the globe, with 1144 persons per square mile in 1898. Hence the struggle for existence is necessarily severe, the more so since sugar is still the staple product. The cane, however, which may be said to cover almost the

BRIDGETOWN, BARBADOS.

whole surface, is here cultivated under specially favourable conditions, which enable the growers successfully to compete with their rivals elsewhere. The industry has survived, thanks to an extremely fertile and suitable soil, the cheapness of labour, the exceeding richness of the cane, and the care bestowed on its cultivation by the planters. "If cane were cultivated as carefully in Cuba as it is in Barbados, the former island would be capable of supplying the world with sugar" (Hill, p. 375). In

BRIDGETOWN, BARBADOS.

1898 the quantity exported exceeded £448,000, besides molasses, £90,000. In the same year the general exports were valued at £740,000, showing an advance of £153,000 since 1895, while the imports rose from £956,000 to nearly £1,100,000, and the revenue from £146,000 to £190,000 in the same period. But there is a heavy debt of £410,000, and the pressure is so acute that many of the inhabitants are driven to seek employment elsewhere.

The immense majority are Negroes, who, like those of Martinique, have a physiognomy of their own, by which they can be always recognised. Here they have been settled for many generations, and have acquired a passionate love of their island home, combined with a genuine feeling of loyalty for their English King and rulers. Although there appears to have been little miscegenation with the whites, whom they outnumber by nine or ten to one, their features have become strangely modified, and many have acquired an almost Asiatic expression beneath a complexion still as dark as that of any African. Nearly all are educated, and the Barbados blacks have perhaps acquired a higher degree of general culture than any other full-blood Negro community. Their high sense of self-respect and love of letters is seen in the young men and women, who resort in considerable numbers to the public library at Bridgetown, and whose reading is not confined to the last fashionable novels.

The whites, about 20,000 altogether, appear to belong for the most part to the same stock as that of the early Virginian settlers. The same family names constantly recur, and before the War of Independence, frequent intercourse was maintained between the planters of Barbados and the Southern States.

CHAPTER XX

THE GUIANAS: LAND AND PEOPLE

Nomenclature—The "Island of Guiana"—Present Political Divisions—Disputed Territories—Physical Features—Coast-lands—Savannas and Woodlands—Mountain Ranges—Roraima—Sierra Acorai—The Tumucuraque and Tumuc-humac Ranges—Rivers—The Essequibo—Kaieteur Falls—The Demerara and Berbice—The Corentyn—Cataracts and Rock Carvings—The Nickerie and Coppename—The Surinam, Commewyn, and Cottica—The Maroni and Oyapok—Scenery of the Guiana Rivers—Climate—Flora—Fauna—Inhabitants—The Aborigines—Arawaks and Caribs—The Macusi—Whites, Negroes, and Coolies.

Nomenclature—The "Island of Guiana"

FEW geographical terms have undergone stranger vicissitudes than Guiana, which, with its numerous variants—Guayano, Guayana, Guayanaze, Guainia, Guaya, Wayana, Waini, and others—was found, with the progress of discovery, everywhere diffused over the whole region between the great bend of the Orinoco and the Lower Amazons. As might have been inferred from its constant recurrence over such a wide area, it was originally not a territorial, but an ethnical word, borne by a multitude of tribal groups belonging either fundamentally or by assimilation to the widespread Carib stock. Peoples at a low state of culture, and living in small isolated communities, mostly in a chronic state of war-

fare with their neighbours, are unable to grasp the idea of great territorial divisions, whether political or geographical, defined by a single comprehensive term.

Hence before the advent of the whites there was no large tract known as Guiana, and it was from them that the word received geographical expression. Nor was it at first applied to the sea-board, to which it is now mainly confined, but to the inland Orinoco districts, where Guiana or Guainia tribes were first encountered.

Later, when the discovery was made that all the land between the two main streams was encircled by a continuous waterway, so that it was possible, by turning the rapids, to ascend the Orinoco, pass thence through the Cassiquiare link into the Amazons, and so return to the ocean, and further, that Guiana peoples were dispersed over both fluvial basins, the geographical term acquired an enormous expansion, being applied to the whole of this "Island of Guiana," as it was called, a vast region some 700,000 or 800,000 square miles in extent. Out of this boundless domain was carved, in the perfervid imagination of Sir Walter Raleigh, the "Empire of Guaya," whither his successor Keymis went in search of the fabulous Lake Manoa, where was a city, "the largest in the world," in which dwelt the equally fabulous El Dorado.[1] It is curious to notice that there really was a Manoa nation, once very powerful and not yet extinct, who dwelt about the confluence of the Rio Negro with the Amazons, a region which, during the floods, is laid under water and forms a great inland sea very much larger than the "great lake" spoken of by Raleigh and figured on his map. But Keymis ascended

[1] Sir Walter's map (about 1595) showing all these wonders was reproduced in 1892 by L. Friedrichsen in facsimile from the original preserved in the British Museum.

neither the Orinoco nor the Amazons, but the Oyapok, between the two, which led to the Tumuc-humac Mountains, and not to the region of gold and precious stones dreamt of by the pioneer explorers in the Guiana lands. Had he followed the course of the Essequibo, he might have reached another district about the low divide between that river and the Rio Branco affluent of the Amazons, which has by some authorities been identified with the legendary Lake Parima, where dwelt the "Man of Gold." Here is the little Lake Amucu, which during the inundations communicates with both basins, and whose bed, according to an old native tradition, "is entirely lined with gold."[1] The precious metal certainly abounds in the surrounding Pirarara Campos, which are still periodically flooded, and formerly constituted an extensive lacustrine depression draining through the Takuta to the Rio Branco, and through the Rupununi to the Essequibo.

Present Political Divisions

After the break up of the Spanish and Portuguese colonial empires, these Guiana lands were also broken up, and thus it came about that all the inland tracts were divided between the newly constituted States of Venezuela and Brazil, heirs to the inheritance of the mother countries. Such inland tracts, covering several hundred thousand square miles, have by administrative arrangements been absorbed in the conterminous republics, and no longer stand out as clearly defined parts of the former Guiana domain. Thus it happens that this expression is now practically confined to the stretch of sea-board which extends from the Orinoco delta to the lately settled

[1] *Geograph. Jour.* March 1893, p. 273.

Brazilian frontier, and had at various times been wrested by France, Holland, and England from the Spanish and Portuguese territories.

The expeditions by which these conquests were effected frequently started from one or other of the Antillean islands belonging to the respective Powers, and in the popular imagination the lands thus acquired seemed rather to form part of their West Indian possessions than of the mainland. Even now produce, such as Demerara sugar, is supposed to come, not from South America, but, like Jamaica rum, from the West Indies, with which the whole region is so intimately associated in its political, economic, and commercial relations, that its treatment follows naturally in this place.

Disputed Territories

In colonial times the Hispano-Portuguese frontiers had nowhere been very accurately laid down in the Guiana lands, but the boundary question between Great Britain and Venezuela was satisfactorily settled by arbitration in October 1899, and that between France and Brazil by the award of 1st December 1900, leaving only a small area subject to contention between Great Britain and Brazil farther west. How extensive were the territories in dispute may be seen from the subjoined table, in which the recognised areas of the three European colonies are distinguished from those which were till recently a subject of contention between all the conterminous states:—

	Area in sq. miles.
British Guiana undisputed	35,000
Guiana disputed by Great Britain and Brazil (Upper Rio Branco)	20,000
Carried forward .	55,000

	Area in sq. miles.
Brought forward .	55,000
Guiana disputed by Great Britain and Venezuela, and mostly awarded to Great Britain by the Paris Arbitration Court, 3rd October 1899	55,000
Dutch Guiana undisputed	46,000
French Guiana undisputed	30,000
Guiana disputed by France and Brazil (between Oyapok and Araguari rivers), and mostly assigned to Brazil by the award of the President of the Swiss Federal Council, 2nd December 1900	150,000
Total Guianas, either held absolutely or claimed by European Powers	336,000

Physical Features—Coast-lands

In marked contrast to this political complexity is the absolute uniformity which is presented by the whole region in its physical features, climate, natural history, and ethnography. The low-lying alluvial coast-lands, which extend for about 730 miles from the Orinoco delta to the Oyapok estuary, rise nowhere more than a few feet above high-water level, and are all of relatively recent formation. They were originally nothing more than a mangrove and courida swamp in front, and a sedgy morass behind, extending for an average distance of some 20 miles inland to the line of white quartz sand reefs which represent the true coast-line of a former epoch. The flat outer zone between this old sea-beach and the present shore is entirely the creation of the rivers acting for ages in concert especially with the mangrove and courida (*Avicennia nitida*) marine plants. For over 50 miles from the coast the shallow waters are charged with vast quantities of suspended matter washed down from the uplands by the Essequibo, the Corentyn, and the other coast streams. With the clays and sands, mostly deposited on the foreshore, come floating masses of tangled vegetation, which, like the sudd on the White

Nile, gets matted together, and is here arrested by the broad fringe of mangroves and courida bush, which extends with scarcely a break except at the river mouths along the whole coast-line. Thus the shore-line is continually advanced seawards, and gradually raised above the surface to form that exceedingly rich alluvial belt which constitutes the only cultivated and almost the only inhabited part of the Guianas.

The Savannas and Woodlands

The *mourie*, as the old marine beach is locally called, has an average height of about 100 feet, with gullies, reefs, and slopes in some places contracting to a narrow ridge, in others expanding into plains several miles in extent. Farther inland the rocky and hilly surface rises gently towards the mountain ranges and elevated plateaux which form an irregular water-parting between the Atlantic and the Amazons basin, and develop their steeper escarpments towards the interior of the Continent. Here are extensive tracts of open savannas, resting, like the Venezuelan llanos, on a sandstone formation, with older intrusive rocks, such as granite, quartz, red and white clays, in which gold is disseminated.

But the whole of the seaward slope lying between the savannas and the old marine beach, and comprising probably five-sixths of the entire area, is still uniformly covered with dense primeval forest, broken only by the narrow river valleys and their numerous affluents ramifying in all directions. Through these impenetrable woodlands no roads have yet been opened by the hand of man, and the whole region would be uninhabitable, even by the natives, but for the streams which constitute the only highways, and although at many points broken by

falls and rapids, are still accessible to canoes for long stretches inland. Even in the long-settled region of Dutch Guiana there are no roads except in the Paramaribo district, and all intercourse is carried on along the waterways, "and this in a country where all the rivers flow up-stream for twelve hours daily, and where the difference of the water-level between the lowest point at the ebb in the dry season and the highest at the flood in the rainy season, at the place where the waters are dammed up (30 to 40 miles from the river's mouth), exceeds 33 feet."[1] Hence it is that the Guianas have been described as all forest and stream, fringed southwards by grassy plains sparsely inhabited by nomad aborigines and Bush Negroes, and merging seawards in a narrow strip of sugar and coffee plantations scarcely more than five miles wide, and inhabited by a handful of whites with several thousand blacks and Asiatic coolies.

Mountain Ranges—Roraima

In such a region the scarcely accessible frontier ranges naturally play a subordinate part in the social and economic relations, the more so since at some points they are interrupted by low plateaux scarcely more than 300 or 400 feet above sea-level. Thus there is no clear divide between the head-streams of the Rio Branco flowing south to the Amazons and the Essequibo flowing north to the Atlantic, which almost intermingle their waters about the Brazilian frontier.

In the region which lies west of these two overlapping fluvial valleys the orographic system attains its greatest elevation in the *Sierra Pacaraima*, where the superb *Mount Roraima*, at the converging point of

[1] Prof. W. Joest, *Geograph. Jour.* 1891, p. 566.

ON THE BARIMA RIVER.

British Guiana, Venezuela, and Brazil, rises to a height of 8740 feet. Roraima, which was first ascended by Mr. (now Sir) Everard im Thurn in 1884, affects the form of a sandstone table, with steep rocky walls 3000 feet high, which spring abruptly from a base formed by a vast accumulation of talus rising 5000 feet above sea-level. From the summit are precipitated several small streams, which are incomparably the highest cascades on the globe, so high that the water is blown into ribbons of spray long before it reaches the ground. On the top, where Mr. Cromer and Mr. Seyler spent a night in 1891, are shown many huge and marvellously shaped boulders, like "majestic palaces, churches, and fortresses"; while others of smaller size resemble pyramids, umbrellas, and kettles, one bearing a striking likeness to the statue of a man. Between these fantastic blocks are innumerable little tarns, some connected together by channels, and ranging from one or two to six feet in depth.[1] During the rains these lakelets overflow and feed the rivulets which are discharged over the rim of this largest, if not loftiest, of all table mounts. The pools swarm with a kind of black beetle, and besides frogs, lizards, spiders, and a black butterfly, one little dark-coloured mammal was seen, apparently a species of coati (*Nasua rufa* or *fusca*) which has an immense range, and two extinct varieties of which were yielded by the bone-caves of Brazil.

Sierra Acorai

Roraima is continued southwards by the irregular and detached *Canucu* and *Uassari* ridges to the *Sierra Acorai* about the sources of the Essequibo. Near the northern slopes of the Canucu range, which has a mean

[1] *Geograph. Jour.* 1892, p. 242.

height of scarcely more than 2000 feet, the low divide between the Rio Branco and the Essequibo is occupied by the little *Lake Amucu*, which drains through the *Pirara* to the *Takutu*, a copious affluent of the Rio Branco, and also communicates during the floods with the Rupununi, which joins the left bank of the Essequibo below the King William IV. Cataract. The whole of this low-lying level region between the two fluvial valleys presents the aspect of an old lacustrine depression which may have discharged its waters either through the Essequibo north to the Atlantic, or through the Rio Branco south to the Amazons. The streams of early migrations must have also followed this route, which still affords easy communication for the Arawak and Carib tribes between the Amazons and Atlantic watersheds.

South of the Canucu ridge the Acorai range, which has a mean height of perhaps 3000 feet, culminates in the *Coirrit* or *Cairrid Dekenon* peak (5000 feet) near the sources of the Takutu. From this point the range develops a vast bend south and east round to *Mount Aourriawa*, where rise the farthest sources of the Essequibo. It is this bend of the Atorai Mountains that gives its great southern extension to British Guiana, which claims the whole of the Essequibo basin, and thus comes within about 60 or 70 miles of the equator.

The Tumucuraque and Tumuc-humac Ranges

Farther east rise the *Curucuri* heights in the territory of the Pianghotto Caribs, beyond which the water-parting and political frontier between Dutch Guiana and Brazil coincide exactly with the *Tumucuraque* range. Here the orographic system almost disappears about the

sources of the Corentyn, where the highest crests stand scarcely more than 300 feet above the surrounding plateau. But it rises again in the *Tumuc-humac* Mountains, which attain an extreme altitude of 2630 feet in Mount *Timotakem*, in the western section of the range.

Between French Guiana and Brazil this range, of which little was known before the recent explorations of M. Coudreau, describes a gentle curve east by south, concentric with the coast-line, but scarcely anywhere rises above the zone of forest vegetation. Hence nearly all the crests are covered with dense woodlands, which offer the greatest difficulty to travellers in their efforts to determine the general relief of these uplands. In their eastern section, where they approach the sea, they branch off in various directions like the ribs of a fan, but so broken and disconnected that here the system ceases to coincide with the water-parting, and thus gave rise to the long pending disputes about the political frontier between French Guiana and Brazil. The head-waters of the coast streams and Amazons affluents — Oyapok, Cachipour, Calciony, Araguary—seem to be interlaced in an inextricable tangle which presented serious obstacles to the surveyors in their attempts to lay down a clear parting-line acceptable to both litigants.

To this mountain system, which approaches the sea near the Oyapok estuary, may possibly belong the few little clusters and chains of islets which here break the monotony of the Guiana sea-board, and one of which—the *Isle du Diable* near Cayenne—has acquired some notoriety in connection with the "Dreyfus Case." Here the unfortunate French artillery officer was detained during the years 1894-1898 under a false charge of treason.

Rivers—The Essequibo—The Kaieteur Falls

Thanks to a copious rainfall somewhat uniformly distributed, and nowhere falling below a yearly average of 100 inches, the Guianas are one of the best watered regions in the world. Owing to the general trend of the uplands, nearly parallel with the coast, and at a mean distance of not more than 250 miles from the sea, few great fluvial systems are developed except in British and Dutch Guianas. Here, as above seen, the inland range dips southwards nearly to the equator, thus giving a course of at least 600 miles to the Essequibo, by far the largest in the Guianas. Its valley, like those of all the other main streams, is disposed in the direction from south to north, and, like them, is also obstructed by numerous falls and rapids, which arrest all navigation, except for boats and canoes, 50 miles above its mouth.

The Essequibo is joined by several copious tributaries, of which the largest are the *Rupununi*, descending from the south, and the *Mazaruni* and *Cuyuni*, which have their sources in or near the Venezuelan frontier, and after a meandering easterly course of over 100 miles, converge with the main stream at the head of a vast island-studded estuary. All the Guiana rivers thus enter the sea through broad estuaries, often several miles wide, and nowhere develop great many-branching deltas like that of the neighbouring Orinoco. This appears to be due to the scouring action of their currents, which prevents the growth of mangroves and couridas, the chief instruments in the formation of shoals and mud-banks. At the same time the Essequibo estuary, which is in places 15 miles wide, appears, like that of the Congo, to be in a transitional state, and, as the current becomes

stemmed with the increasing size of the islands, will no doubt gradually develop into a true delta.

KAIETEUR FALLS.

Of the many cascades and cataracts which add so much to the romantic charms of the Guiana rivers, none can compare in size and grandeur with the *Kaieteur*

Falls on the *Potaro* tributary of the Essequibo, which were discovered by Mr. C. Barrington Brown in 1871, and have since been visited and described by Sir E. im Thurn and other travellers. Here the river is precipitated over a steep cliff 741 feet high, and at high water 370 feet wide.

But it is to its wonderful surroundings more than to its magnitude that Kaieteur owes its almost unrivalled magnificence. The long winding ravine which leads up to the falls ends in a perfect amphitheatre with cliff-like walls 800 feet high, and into this basin the river tumbles bodily from the plateau higher up. A remarkable feature is a huge yawning cavern in the cliff behind the column of water, apparently caused by the ceaseless back splash washing away the sandstone which underlies the harder conglomerate of the plateau. Seen from above, the spectacle, set in a lovely frame of intensely vivid vegetation, is surpassingly beautiful. "Seven hundred and fifty feet below, encircled by black boulders, lay a great pool, into which the column of white water thundered from by my side. Behind the fall, through the thinnest parts of the veil of foam and mist, the great black cavern made the white of the water yet more white. My first sensations were of a terrible and undefined fear, which, however, gradually gave way to others of intense wondering delight; and the whole scene—the gigantic weird fall, the dark and slippery places below, the grass-covered rocks at the gate of the amphitheatre, and beyond that the bright thickly wooded valley of the winding river, visible for many miles—was revealed, never to be forgotten."[1]

[1] E. im Thurn, *Among the Indians of Guiana*, p. 67.

The Demerara and Berbice—The Corentyn—Cataracts and Rock Carvings

East of and parallel to the *Essequibo* flows the *Demerara*, which, though a much smaller stream, gives an alternative name to the colony. It descends from the *Maccari* heights to the coast at the capital, Georgetown, and in its lower course communicates through sluggish channels and backwaters eastwards with the *Mahaica* and *Abari* coast streams. The Abari itself is similarly connected during the floods with the *Berbice*, which rises about 3° S. lat. on the northern slope of the low range of granite and sandstone hills which are pierced by the Essequibo at King William IV. Cataract, and a little farther east by the *New River* at the King Frederick William Cataract. After a winding northerly course of about 400 miles the Berbice reaches the coast at New Amsterdam, not far from the Dutch frontier, which coincides throughout its entire length of nearly 600 miles with the valley of the *Corentyn*.

This great waterway, ranking in volume next to the Essequibo, is formed by the junction of the *Carumi* and *New River* at the King Frederick William Cataract, where it is already a copious stream. Below the confluence the Corentyn descends to the northern plains through a series of magnificent falls and rapids, which terminate 175 miles from its mouth at the "Great Cataracts" of *Mawari Wonotobo*, some distance above the famous *Temehri* rock carvings. Immediately above Wonotobo the Corentyn ramifies into several channels, whose swirling waters, winding between a cluster of rocky islets, are precipitated from a height of about 100 feet into a granite basin three miles in circumference, beyond which they continue their course in a majestic

stream over 300 yards wide and 30 deep. The inscribed figure which gives its name to the Temehri rock is 13 feet high, and reproduces in outline a rude design which recurs on the painted or carved rocks in many other parts of the Guianas. It is described by Mr. im Thurn as a rectangular figure, higher than broad, crowned by a semicircle marked with distinct radii, and filled in by a pattern of straight lines.

The Nickerie and Coppename

Although unobstructed in its lower course, the Corentyn is not accessible to large vessels, its broad estuary being, like that of the Essequibo, blocked by numerous islands, reefs, and shoals. It is joined at its mouth by the *Nickerie*, which comes not from the south, but from the east, and is one of those characteristic coast streams of Dutch Guiana that fluctuate with an irregular sluggish current through the low-lying alluvial plains where are centred nearly all the plantations of the colony. Some of the inland rivers are intercepted on their course to the sea by these waterways, which they deflect now to the east, now to the west, according to the trend and strength of their currents. Thus the *Upper Nickerie* and the *Upper Coppename*, after their junction with the transverse coast streams, continue their seaward course, the former to the west, the latter to the east, while the sluggish channel between the two sets alternately to the right or the left according to the varying force of the inland streams. In this way is developed a labyrinth of natural canals which ramify in every direction, and have been embanked and improved by the skilled Dutch engineers so as to serve all the purposes of highways. The so-called *Sommelsdyk Canal*, connecting the *Saramacca River* with the *Surinam*

estuary at Paramaribo, is one of those ramifying creeks which was canalised in the seventeenth century by the famous Governor van Sommelsdyk, and named from him.

The Surinam, Commewyn, and Cottica

The Surinam, from which Dutch Guiana takes an alternative name, has its sources on the southern slopes of the Amazons-Atlantic divide, and after a northerly course of over 400 miles enters the sea through a noble estuary, 3 miles wide, a short distance below Paramaribo. Of all the large Guiana arteries the Surinam is the least obstructed by reefs or rapids, and is accessible to vessels drawing 10 feet for about 100 miles from the estuary. For 40 miles of its lower course it maintains an average breadth of half a mile, with a depth of from 30 to 60 feet. At Fort New Amsterdam, just below Paramaribo, it is joined by the *Commewyn*, which is here little if at all inferior in size and volume to the main stream.

Farther on the Commewyn is joined by the *Cottica*, and the Cottica by the *Coirmotobo*, all descending from the south, and then trending either east or west parallel with the coast. Thus is continued beyond the Surinam the same intricate system that prevails beyond the Corentyn, affording continuous waterway along the Dutch sea-board through the Nickerie, the Coppename, the Sommelsdyk Canal, the Commewyn, Cottica, and Coirmotobo, all the way to the *Maroni* (*Marowyn*), the frontier river towards French Guiana. "From Fort Sommelsdyk onwards the view on either bank gains in beauty what it loses in extent. The bendings and turnings of the river are innumerable; indeed it not rarely coils on itself in an almost circular loop, the nearest points of which have

been in many instances artificially connected by a short but deep and navigable canal, the work of Dutch industry. Several little islands, each an impenetrable mass of tangled vegetation, have thus been formed. Several creeks, as all lesser watercourses are here called, fall into the main stream, or from distance to distance connect it by the aid of canals with the sea. These creeks, with the canals and ditches dependent on them, complete the water system, alike of irrigation and traffic, throughout this wonderful land, where nature has done so much, and art and skill yet more. But whatever the sea-communications through these occasional openings, no brackish taint ever finds its way to the higher level through which the Cottica flows; and the freshness of the water is betokened by the ever-increasing loveliness and variety of the river-side vegetation. Lowest down hangs the broad fringe of the large-leaved *moco-moco*, dipping its glossy green clusters into the stream. Above tower all the giants of West Indian and South American forests, knit together by endless meshes of convolvulus, liana, creeper, and wild vine, and surcharged with parasitic orchids, till the burden of a single tree seems sufficient to replenish all the hothouses of England from stove to roof. Birds innumerable, black, white, mottled, plain, blue, yellow, crimson, long-billed, parrot-billed, a whole aviary let loose, fly among the boughs, or strut fearless between the tree-trunks, or stand mid-leg deep meditative in the water. Bush-Negro families peer curiously from the doors of their floating cottages, or guide their timber rafts down the stream. Ever and anon a white painted barge, conveying an overseer, a book-keeper, or some other of the white or semi-white gentry, rows quickly by; for the river is a highway, and the wayfarers along it are many, so that where its banks are at the lone-

liest, the stream itself has life and activity enough to show." [1]

The Maroni and Oyapok

From these bright and busy scenes the oppressive dreariness of French Guiana—little better than an enlarged convict station—is cut off by the Maroni River, which, like the Surinam, descends from the northern slopes of the divide, follows the same northerly trend, and enters the sea through a similar broad and deep estuary. Its upper course is formed by the junction of the *Lawa* or *Awa* and *Tapanahoni*, the former of which was made the political boundary by the Tzar, to whom the question was referred in 1891. By this award the whole of the tract enclosed by the two headstreams was assigned to Holland. At the confluence the Maroni is only 660 feet above sea-level, which, distributed over a course of about 250 miles, shows a somewhat gentle incline for the fluvial valley taken as a whole. But owing to its disposition in a succession of nearly level terraces, the stream has still to tumble over a series of foaming rapids, or even low cascades, as it falls from terrace to terrace on its descent to the lowlands. Below the *Hermina* (*Aramina*) *Falls*, last of these obstructions, the Maroni presents a clear waterway 1000 or 2000 yards wide, and accessible to small steamers for 50 miles above the bar, which has a depth of 15 or 16 feet even at low water.

Beyond the Maroni the only important river is the *Oyapok*, which rises at the *Watagnapa Peak*, in the Tumuc-humac range, and since the award of December 1900 serves as the frontier of French Guiana towards

[1] W. G. Palgrave, *Dutch Guiana*, p. 119.

Brazil. Like the Maroni, the Oyapok descends to the coast through a series of nearly level reaches, where, however, the successive falls are both more numerous and higher.

Subjoined is a comparative table of the chief hydrographic elements of the more important Guiana rivers:—

	Length in miles.	Basin, sq. miles.	Mean discharge per second in cubic feet.	Length of navigable course.
Essequibo . .	630	65,000	70,000	40
Demerara . .	180	3,000	7,500	100
Berbice . . .	335	14,000	17,000	170
Corentyn . .	465	23,000	34,000	70
Surinam . . .	310	15,000	18,000	100
Maroni . . .	400	24,000	38,000	50
Oyapok . . .	310	12,000	25,000	40

Scenery of the Guiana Rivers

Except in the immediate vicinity of the great falls and cataracts, most of the larger Guiana rivers are too uniform to be picturesque. But nothing can surpass the indescribable charm of the smaller creeks and tributaries, which often seem to meander through a veritable wonderland of tropical loveliness. "Painter and poet have depicted the brooks and small rivers of temperate climates, but all their glorification of nature seems tame when applied to a creek. Even the ordinary observer becomes enthusiastic, while the naturalist experiences a feeling of ecstasy that is simply indescribable. The fatigue of a long boat journey on the open river, where the fierce rays of the tropical sun poured down incessantly and blistered his face, neck, and hands, is all forgotten, and he can do nothing but sit up and feast on the beautiful. Every bend brings up a new scene. Here is a great mora towering to a height of a hundred and fifty feet, from which hang festoons of creepers decorated with large flowers of most gorgeous colours. Below and

in the foreground are a thicket of tree ferns, great clumps of marantas and heliconias—a hundred species of shrubs and low trees. A little farther on we come upon reaches

TROOLIE PALM.

where the most striking objects are palms, here a troolie with almost undivided leaves twelve feet long, farther on a clump of graceful manicole, and in another place perhaps the stately fan-leaved eta. Now the creek is

almost closed by a lattice of bush-ropes, and then we have to pass under a leaning trunk or branch almost touching the water. Hundreds of cord-like aerial roots depend from the topmost branches of the trees, and have to be moved aside as we get among them, while great bunches of flowers depend from the creepers, which also obstruct the way in some places.

"If the creek is not kept open by Indians it is often choked by vegetation. A dense wall of creepers forms a curtain, and we can only push through by aid of our cutlasses, which are always carried for this purpose in bush travelling. Under water are the remains of trees which have fallen during several centuries. When the water is low we see them lying in inextricable confusion on the bottom, and every now and then our bateau grazes one that stands higher than the rest, or perhaps lodges upon it until pushed off. By and by the flood comes—the channel is not wide enough—the water boils and eddies behind the great root or clump, carrying off great masses of clay and washing the roots clean. When a giant mora is undermined by the flood, and can no longer be supported by its weaker neighbours, it comes down with a crash, carrying destruction to everything in its way. A score of smaller trees will have their heads torn off or limbs severed, and perhaps a hundred palms, marantas, and low bushes be smashed to pieces."[1]

Climate

Heat and moisture, prevailing with great uniformity throughout the year, constitute the essential elements of the Guiana climate, which, although necessarily enervating for the white man in the long-run, is not nearly so un-

[1] J. Rodway, *In the Guiana Forest* p. 102 *sq.*

healthy, even in the forest zone, as is commonly supposed. The temperature, rarely excessive for a region lying so near the equator, is moderated on the low-lying and, in places, swampy sea-board by the fresh marine winds, which sweep over the land night and day from year's end to year's end. Among tidal streams on a tidal coast the agues caused by the exhalations in the marshy districts are little felt, while the fevers endemic in the wooded districts are not of a virulent type. The high mortality of travellers in these woodlands, which have thus acquired an undeserved reputation for unhealthiness, appears to be largely due to their careless or intemperate habits. Sir E. im Thurn, long a resident in British Guiana, assures us that on the whole "these interior lands are not unhealthy," and that "the traveller of ordinarily good constitution who leads a temperate life need not fear anything more than great discomfort" (*Op. cit.* p. 20). Besides fever, the most dangerous disorders appear to be dysentery and ophthalmia, and the latter has to be especially guarded against. It easily affects travellers, and is very common amongst the natives, who generally suffer from weak eyes. It is due to the countless tiny flies which settle constantly on the eyeball, and the form which it assumes is extremely severe, affecting even the brain, and causing delirium, at least in the case of Europeans. In Dutch Guiana leprosy still survives, and has been attributed to the salt fish which constituted the ordinary slave diet throughout the West Indies in plantation times. "Though not contagious, and hardly even infectious, it is certainly hereditary. Improved diet and, above all, fresh articles of food put a limit to its ravages, and give hopes that it may ultimately disappear" (Palgrave, p. 23).

Thanks to the prevalence of the moist north-east

trades, which blow regularly from November to February, and again from May to September, the mean annual rainfall exceeds 100 inches on the sea-board, and as many as 168 inches have been recorded in Cayenne. But even when no moisture is precipitated, the atmosphere is saturated with vapours, except perhaps in the relatively dry month of March, whence the expression "March summer" current in French Guiana. At other times the fogs, rising about sunset, "spread like a vast shroud over the woodlands, where they are often pierced by the large trees, whose crests rise above the dense haze like rocky islets in the midst of the sea. The plains, the headlands, everything is wrapped in this damp covering, with which are intermingled the miasmatic exhalations of the soil." [1]

With the rains corresponds a somewhat lower temperature, so that in the Guianas the short summers are dry, the long winters wet, if indeed such seasonable distinctions can be made where such slight differences prevail throughout the year. In the interior, which is still unsettled, no systematic observations have been made. But from the records taken in the three capitals and tabulated below, it results that while the mean is everywhere nearly the same—about 80° Fahr.—the range of temperature nowhere exceeds 26° throughout the year:—

	Mean Temp.	Highest.	Lowest.	Rainfall.
Georgetown . .	81° F.	90° F.	74° F.	120 inches
Paramaribo . .	79° ,,	96° ,,	70° ,,	140 ,,
Cayenne . . .	80° ,,	92° ,,	72° ,,	130 ,,

There is, however, a considerable difference, at least in the forest zone, between the days, which are nearly always sultry or oppressively warm, and the nights, which are often by comparison bitterly cold. The absolute

[1] E. Reclus, vol. xix. p. 25.

difference may not be great, but owing perhaps to the prevailing dampness, it is acutely felt, and all travellers find these sudden transitions very trying.

Flora

Apart from the narrow strip of coast-lands under cultivation, naturalists distinguish two botanical zones—the primeval forests of the interior, and the savannas of the southern uplands and the east coast. These correspond to the *campos* of Brazilian Guiana, and to the *llanos* which occupy the greater part of southern Venezuela. They are not, strictly speaking, an absolutely treeless region, as commonly supposed, but rather present all the transitions between continuous woodlands and open grassy steppes. Nor are they confined to the inland tracts about the Amazons-Atlantic divide, but also comprise most of the eastern sea-board, and more particularly the extensive territory formerly contested by France and Brazil between the Oyapok and the Amazons estuary. Hence the general absence of an arborescent vegetation cannot be explained by a deficient rainfall, but must also be largely due to other causes, such as the nature of the soil, much of which formed in comparatively recent times the bed of a great lacustrine basin. This is the more probable, since in some districts the transition from the wooded to the open zone is quite abrupt, and the wayfarer passes in a moment from the trackless primeval forest to boundless grassy plains stretching away beyond the horizon. But the prevailing herbaceous growths of the *campos limpos*, as the Brazilians call the true savannas, are generally diversified by clumps of shrubs or stunted trees, either scattered irregularly over the surface, or else disposed in rows along the banks of the winding steppe

rivers. Here the most conspicuous forms are the *pinot* palm (*Euterpe edulis*) in French Guiana, and elsewhere the *Mauritia* palm, crowned with tufts of pendent fan-shaped leaves. But there is a strange dearth of flowering or bright-coloured grasses, which lend such a charm to the North American prairies and the Argentine pampas. Occasionally the campos are fired by the natives, but the conflagrations are neither so widespread nor so rapid as in the Far West, a difference due to the nature of the herbaceous plants, which, containing more moisture, are less inflammable than the prairie grasses.

In the forest zone are to be distinguished the region below the cataracts, from 40 to 50 miles broad, which has already been attacked by the woodman's axe, and the still untouched primeval woodlands, which stretch thence south to the savannas. Here the most dominant forms are the greenheart (*Nectandra rodiæi*) and the mora (*M. excelsa*), two of the most valuable trees in British Guiana. The mora, which occurs also in Trinidad, is a majestic tree, from 130 to 150 feet high, with a close-grained wood equal to the finest oak, hence much used for shipbuilding. The greenheart is the *bebeeru*, a member of the laurel family, which has also a very strong, durable timber, and the bark of which yields a very valuable tonic and febrifuge. It can be given with advantage to those who are unable to take quinine, but the supply is so uncertain that it has not yet come into general use. In the greenheart Guiana possesses a great store of undeveloped wealth.

In general the trees and shrubs resemble the Spanish chestnuts, oaks, acacias, and laurels both in form of growth and of foliage. The prevailing colour of the forest is due more to the diverse shades of the foliage than to any great abundance of flowering plants. But

GIGANTIC FIG TREE.

there are several which can scarcely be surpassed for their superb efflorescence. Such are the kakia, with leafless branches shooting high above the surrounding trees, and weighed down with dense masses of golden blossom; the "Long-John" (*Triplaris surinamensis*), laden with feathery bunches like lilac, but much larger, at first creamy white, and then turning to a lovely red tinge; the *hipponai* (*Parkia pendula*), with branches arranged in tiers like the cedar of Lebanon, its finely-cut acacia-shaped foliage very dark in colour, while from the end of each branchlet hangs, at the end of a pliant whip, three or four feet long, a globe of crimson flowers, hanging in deep, even fringes from the outer edge of each shady branch, "perhaps the most beautiful plant I can remember" (im Thurn). And there is a creeper (*Norantea guianensis*) which runs like fire over the tallest trees, throwing out many flame-like spikes of dense scarlet bloom, two or three feet long, and many other wonders of the creeping, climbing, parasitic orchid world.

Amongst the numerous aquatic growths which carpet the surface of the waters with every colour of the rainbow, unrivalled for size of foliage and bloom, is the superb *Victoria regia*, first discovered in 1837 in the Berbice river, but afterwards met on many of the Amazonian water-courses.

Economic plants—dyewoods, drugs, rubber, oleaginous, resinous, aromatic, and gummiferous species, the hyawa incense tree, and several exquisite cabinet woods—abound in all the woodlands, which may be regarded as a northern extension of the Amazonian forest flora. Yet here is also found a "traveller's tree," like that of Madagascar (*Ravenala guianensis*), a wild plantain with huge shooting up 12 or 15 feet from the g

disposed as to form reservoirs, which retain much rain-water even in the dry season. Both cacao and the pine-apple run wild, and there are as many as twelve varieties of manioc, and hundreds of fibrous plants from which the natives have learnt to weave an endless variety of serviceable textile fabrics. Thus in the Guiana flora is held in reserve an inexhaustible supply of raw materials available for economic purposes.

Fauna

In the Guiana fauna, as in the flora, Amazonian forms greatly predominate. Even some of the more characteristic species, which were supposed to be peculiar to this region, have afterwards been met in Brazil and Venezuela. Such are the marsh deer (*Cervus palustris*), which frequents the swampy districts; the *maiking*, or wild dog, which hunts in large packs, like the northern wolf; the *campanero*, or bell-bird, with a metallic note as of two iron bars struck together; the "sulphur tyrant," very common in French Guiana, where from its peculiar note it is called the *kiskadi* (*Qu'est ce qu'il dit*); the *quow* (*Gymnocephalus calvus*), which, although no bigger than a pigeon, emits a deep sound like the lowing of an ox, hence is popularly known as the "calf-bird"; the crab-eater, which preys on crabs and builds its nest in the river banks; the gray crane, nearly as tall as an ostrich; flamingoes, herons, and many other aquatic fowl common to both slopes of the water-parting.

Of mammals the most prominent are three rodents—the labba (*Cœlogenys paca*), which is like a large guinea-pig, brown with white spots, frequents the river banks, and is much prized for its flesh by Europeans as well as by the natives; the acourie (aguti), like a long-legged

rabbit, with coarse chestnut-coloured hair; and the water-haas (*Hydrochærus capybara*), not unlike the labba, but much larger. There are two species of peccaries, one (*Dicotyles torquatus*) met in parties of five or six, the other (*D. labiatus*) in herds of a hundred head, the larger and more dangerous of the two. They are said to kill the jaguar with their tusks, and if attacked by a man will drive him to take refuge in a tree, and then squat patiently round until he is starved out or relieved by his friends.

Of the three species of ant-bear the largest (*Myrmecophaga jubata*) is about the size of a bloodhound, with a huge bushy tail, while the smallest (*M. didactyla*) is no bigger than a toy terrier, and covered well over with soft, silky, short hair. Amongst the felidæ, all locally called "tigers," are several species of jaguars and ocelots, each of which, according to the natives, has its own particular quarry. There are also several kinds of small deer, armadilloes, opossums, bats, and vampires. The last mentioned attack poultry and other domestic animals, and even man himself, showing an unaccountable preference for some over others. The bite causes little or no pain, nor does the danger lie so much in the blood-letting at the time as in the after-flow from the unnoticed wound.

Besides the above-mentioned birds there are others in immense numbers and variety,—parrots, toucans, macaws, chatterers, perchers, climbers, humming-birds, vultures, hawks, owls,—often noted for their brilliant plumage, but scarcely ever for their musical faculty. The chief exception is the tiny "Louis d'or" (*Euphonia minuta*), with steel-blue back and yellow breast, which chirps out a few sweet but feeble notes. Most abundant of the humming-birds is the "king" (*Topaza pella*), gorgeously

arrayed in ruby and green flamelets instead of feathers, and with enormously long forked tail. To a brilliant plumage and extraordinary crest the "cock-of-the-rock" (*Rupicola crocea*) adds the dancing faculty, which has been cultivated in the forest glades and open savannas. Some smooth slab of rock is generally selected, which is

COCK-OF-THE-ROCK.

enclosed by bushes, on which the audience are perched to witness, and in turn take part in the performance.

Reptiles, though numerous, and often of great size, are rarely venomous or in any way dangerous if unmolested. Alligators have sometimes measured twenty feet from snout to tail, and this member if injured appears, like that of the lizard, to have the power of

budding again. There are land boas (*B. constricta*) and water boas (*Eunectes marina*), the former rarely seen, the latter more in evidence, and often of immense size. One described by im Thurn was twenty feet long and three in circumference, and the same naturalist found the skin of another to be thirty feet long. He also made the discovery that this and some other snakes snore, a fact well known to the natives.

A vivid illustration of the noxious forms that swarm in and about all the woodland streams is afforded by the bather, every part of whose body, immersed in the water, is liable to be bitten by the perai, most voracious of fishes, or lacerated by the poisoned spine of the sting-ray, or convulsed by a violent shock from an electric eel, or snapped off by a passing alligator. On the other hand the exposed parts may be stung by mosquitoes or sand-flies, or many other winged pests, while the whole body may be enveloped, crushed, and swallowed by some huge calnacarano, as the natives call the water boas. But compensation is afforded by many harmless and lovely forms of life, notably the butterflies, one of which, the superb *Morphos*, with enormous glossy blue wings, flaunts lazily down the dark avenues through the tree trunks, looking at a distance like a flash of azure light. Others with absolutely colourless, transparent wings flit about like the pale ghosts of butterflies, while tiny hawk-moths flash about in the sunlight, darting so rapidly from bush to bush that "only colour without form is seen" (im Thurn).

Inhabitants—The Aborigines

In the Guianas the shiftings and displacements of the populations since the discovery have been brought about by causes somewhat different from those which have

operated in the surrounding lands. Hence the results have also been different, and although the aborigines are no longer seen on the sea-board, they have neither been exterminated, as in the West Indies, nor have they merged with the European intruders in new ethnical groupings, as in so many parts of Latin America. While withdrawing to the interior, they have preserved their original tribal organisation, their nomad habits, traditions, religions, ideas, social usages, language, and racial purity. They may here still be studied in their primitive homes, unaffected by foreign influences, beyond such as may be caused by slight contact with their European magistrates, a few sportsmen, orchid hunters, naturalists, or passing travellers. It is this circumstance that imparts such value to the accounts given of their customs, physical and mental characters, and inner life, by im Thurn, Rodway, the brothers Schomburgk, Brown, Coudreau, Whates, and the few other accurate observers to whom we owe some very full descriptions of these typical South American aborigines. "They are a nomadic race," writes Mr. Whates. "Though the various tribes, who promise in due course to be as extinct as the pure Caribs, confine themselves to areas of the country well understood among themselves, they roam about as fancy dictates. Their possessions give little trouble in transit. They live in open *benabs* or huts. A little hacking at the forest undergrowth, or at the limbs of a fallen greenheart, yields poles for the framework of their dwellings. Near the creeks there are always huge palms with which they can roof over the V-shaped skeleton of a house. All they need is a slightly better shelter from sun and rain than is given by the interlacing arms of the giant trees. The only furniture they want is a few hammocks of their own making, which serve alike for sitting and for sleep.

The men hunt and fish, the women cultivate the cassava patch, weave the hammocks, prepare the food, and brew the intoxicant. They do whatever manual work is to be done, and when the tiny crop is cleared, or when the game and fish fail, a move is made elsewhere in rude corials along the rivers to some other seemingly inaccessible creek. If an overland journey has to be made, the household goods are packed, with the babies on the backs of the women, while the men tread their way along an indiscernible trail through the forest or over the savanna, carrying their spears and bows and arrows, and scorning any mental burden. A few rude implements for the soil, a dog, one or two tame animals perhaps, hammocks, earthenware vessels, and the like, are their only implements. To the Indians beyond the Wenamu one savanna will doubtless be as good as another. They will be farther removed from the mountains, where spirit gods dwell, but there are ghostly beings innumerable in Guiana. Every river, creek, and waterfall has its unseen and unknowable deity—usually of a wicked disposition, so far as any insight into Indian religious ideas enables a judgment to be formed. No man has seen into the mind of the Guiana aborigine. He guards the chambers of his soul with a stolidity not to be overcome, and keeps the very porticoes veiled and darkened. He is a man, and therefore a mystery—as great and as fascinating a mystery as his primeval home."[1]

Arawaks and Caribs—The Macusi

This general description applies to all the Guiana aborigines, who present a remarkable sameness in their bodily and mental qualities. They belong, nevertheless,

[1] H. Whates, *Fortnightly Review*, November 1899.

to four distinct stocks—the nearly extinct WARRAUS of the coast-lands between the Corentyn river and the Orinoco delta; the ARAWAKS, including the *Atorais*, the *Wapisianas*, *Amaripas*, *Tarumas*, and a few others now

AKAWAIS.

mainly confined to British Guiana; and the CARIBS, with numerous tribal groups in all the colonies: *Macusi*, *Arecunas*, *Akawais*, *Paramonas* in British Guiana; *Calinas*, *Acurais*, and *Pianghottos* in Dutch Guiana; and *Rucuyennes*, and *Galibi* in French Guiana; lastly, the

TUPI, of whom there are two branches—*Emerillon* and *Oyampi*—also in French Guiana. But most of the groups comprise only a few hundred individuals, and all the aborigines do not number collectively more than about 14,000—8000 in British, 3000 in Dutch, and 3000 in French Guiana.

Physically the Guiana Indians may be described as rather undersized, with generally well-formed trunk and limbs, a reddish cinnamon colour, long, black, and lank hair, somewhat flabby, sleek, or smooth flesh, slight muscular development, soft, but rarely agreeable features, gentle and even feminine expression, and low vitality. Although they never become bald, few, if any, attain a great age; nor are they capable of prolonged exertion of a severe nature, and from the feeble constitution of the Guiana Indians, it is easy to understand how multitudes of the kindred races—Carib and Arawak—succumbed rapidly to the hardships to which they were subjected by the early planters in Cuba and the other Antilles. Yet they show astonishing power of resistance in the severe tests of endurance to which they voluntarily submit themselves, as in the whip-game or dance of the Arawaks, in which the players "stand in two rows

CARIBS.

opposite each other. Each man has in his hand a whip with a hard, strong lash made of fibre. Every now and then a couple retire from the line and use their whips. One stands steadily, one leg in front of the other; the other swings back his whip, and with all the force he can command, lashes the calf of the first man's leg. Then in his turn the second man stands still to receive a lash from the other. They lash each other in this

ARAWAKS PLAYING THE "WHIP-GAME."

way until their calves are striped with weals and blood flows freely. Finally the dancers retire and drink together" (im Thurn).

In former times cannibalism prevailed to a great extent both amongst the Carib and the Tupi peoples. Of this practice reminiscences still survive, as in French Guiana, where the Oyampi sing of "the olden times when we were men and ate our enemies; now we are women and eat nothing but cassava." Their very tribal name, Oyampi, is said to mean "man-eaters," although,

like all other Guiana peoples, they have long forfeited their claim to the title. These Tupi tribes came originally from Brazil, and to the same region has now been traced the primeval home of the Caribs, who were formerly supposed to have reached the Guianas from the West Indies and Central America. From the recent explorations of von den Steinen, Ehrenreich, and others, it appears that the primitive stock is to be sought about the headwaters of the Xingu, where the Bakairi and several other rude tribes speak an archaic form of the Carib language. Hence the early migrations must have been, not from the north, but from the very heart of the southern continent along the banks of the Amazonian affluents to the Guianas and the Antilles.

Of all the Guiana branches the Macusi are at present the most numerous and widespread. They occupy an extensive domain in the southern parts of the British territory, and range beyond the frontier over the savannas about the head-waters of the Rio Branco. From the closely related Arecunas they are distinguished by their lighter complexion, taller and more shapely figures, more regular features, brighter, more intelligent, and gentler expression. The women are less elaborately adorned than the men, who wear an imposing semi-circular headdress surmounted by long plumes, and pierce the lower lip for the insertion of a long string, to which is attached a bell-shaped ornament hanging down over the chin. From the septum of the nose is also sometimes suspended a half-moon-shaped labret resting on the upper lip. A curious division of labour obtains between the Arecunas and the Macusi, the former growing and spinning the cotton which the latter weave into hammocks and other articles, both for their own use and for barter with the neighbouring tribes.

They are also the chief makers of the deadly curare (urali) poison, the recipe for which is carefully kept and

Burke, Photo, Demerara.

MACUSI INDIANS.

transmitted from generation to generation in a few families. The essential ingredient is the bark of a

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creeping plant (*Strychnos toxifera*), which, if kept warm and dry, will retain its efficacy for years.

Whites, Negroes, and Coolies

In the narrow belt of cultivated coast-lands, where the great bulk of the inhabitants are concentrated, the aborigines have been almost everywhere replaced by the whites—officials, military, traders, planters, and convicts; a considerable number of half-castes, Jews, and others of Portuguese speech, from Brazil; Asiatic coolies, mostly from India; and Africans, descendants of the emancipated slaves. Lastly, in the interior of Dutch Guiana are several groups of so-called "Bush Negroes," that is, runaway slaves, who in the eighteenth century escaped to the backwoods, and, after long wars with the Dutch, succeeded, like the Jamaican Maroons, in founding a number of petty states, whose independence is recognised by the authorities, and is maintained to the present day. From the subjoined table of the populations of the three colonies according to races, it will be seen that the Africans and Asiatics immensely outnumber all the other ethnical elements:—

	British Guiana.	Dutch Guiana.	French Guiana.
Europeans	8,000	2,000	7,000
Brazilians	20,000	1,000	500
Africans—			
Freedmen	130,000	45,000	13,000
Bush Negroes	...	17,000	...
Asiatics	120,000	12,000	4,000
Aborigines	8,000	3,000	3,000
Total	286,000	80,000	27,500

CHAPTER XXI

THE GUIANAS: POLITICAL DIVISIONS

I. British Guiana—II. Dutch Guiana—III. French Guiana

I. British Guiana

In the South America of this series, chap. iv. p. 73, full particulars will be found of the boundary question which had long been pending between Great Britain and Venezuela, and was finally settled by the Paris Court of Arbitration, 3rd October 1899. Here it will suffice to say that by the award the British claims were substantially upheld, the Schomburgk line being taken as the boundary everywhere except at two points. As now modified the line runs from the coast at Point Playa, instead of at the mouth of the Amakuru river, Barima Point and the lower course of the Barima river being thus assigned to Venezuela, and British Guiana cut off from direct access to the Orinoco delta. The other modification of the Schomburgk line occurs in the Cuyuni valley, where the boundary, instead of following the river to its source, is made to coincide with its Wenamu affluent, thus assigning to Venezuela the Cuyuni goldfields. But the extravagant claims of the republic to a great part of the Essequibo basin are put aside, and the actual area of British Guiana, as hitherto

commonly accepted and laid down on ordinary maps, remains nearly the same as before—about 105,000 square miles, or 12,000 more than that of Dutch and French Guiana taken collectively. Its population also —278,000 in 1898—exceeds the joint population of

SHIELD GAME OF WARRAUS.

the sister colonies by nearly 180,000, and appears to be more rapidly increasing.

The first attempt at a permanent occupation of this region dates from the year 1580, when a few Dutch pioneers established themselves about the Pomeroon estuary, a short distance west of the Essequibo. But the plantations were gradually abandoned, and when the

region west of the Corentyn was taken by the English under General White in 1796, most of the sea-board was still in a wild state, inhabited mainly by a few groups of Warrau natives and some descendants of the runaway slaves who had taken refuge in the district about the year 1738.

For many years after its cession to Great Britain in 1814 little was done to develop the resources of the

WARRAUS.

colony, and the coast-lands west of the Essequibo continued to be neglected till about the year 1870, when regular settlements began to be formed, chiefly by Brazilian speculators. Since then agricultural progress, stimulated by the discovery of the goldfields towards the Venezuelan frontier, has been rapid and continuous in the *North-West District*, as that section of the colony is now called which extends from the Essequibo in the direction of the Orinoco. Regular steam communication is established with Georgetown, and flourishing stations

have been founded on the Barima and Waini rivers. Here is some of the richest alluvial land in the world, yielding, when drained, tropical produce in amazing abundance. Im Thurn tells us that a plot cleared and drained by himself had in less than three years avenues of casuarina-trees over 40 feet high. The higher parts of the new districts are attracting numerous prospectors, and although some of the goldfields have been ceded to

ALLUVIAL GOLD WASHING AT ARAKAKA ON BARIMA RIVER.

Venezuela, many others remain, which lie well within the British frontier. Systematic mining operations began about the year 1866, and in the first decade the total output fell little short of £2,800,000. In 1897 the yield was nearly 127,000 ozs., but fell in 1899 to 112,464 ozs., although the auriferous beds show little sign of exhaustion.

Some attention has also recently been paid to the lumber business, a chief outlet for which is the pictur-

esque little town of *Bartika Grove*, at the head of the Essequibo estuary, where converge the large rivers Cuyuni and Mazaruni from the west. Formerly a noted missionary station, Bartika had almost disappeared amid the surrounding tropical vegetation, when its prosperity was revived by the development of the overground and underground resources of the North-West District in recent years, and it now promises to become the chief trading centre of the colony.

Meanwhile sugar and rum continue to be the staple industries, and although scarcely 70,000 acres are under cane, sugar was exported in 1899 to the value of over £1,000,000, besides rum £145,000, and molasses £12,000. Most of the plantations lie east of the Essequibo in the old settlements about the lower courses of the Demerara and Berbice rivers and intervening coast-lands. Here is centred the greater part of the population, and here are the two largest places in the colony—*Georgetown*, the capital, at the mouth of the Demerara, and *New Amsterdam*, on the east side of the Berbice estuary.

Georgetown, which is the old Dutch settlement of *Stabroek*, renamed in honour of George III., has a population of over 53,000, and is by far the largest place on the sea-board between the Orinoco and the Amazons estuary. It extends for nearly two miles along the right side of the estuary, which is guarded by *Fort William* at its north-eastern extremity. At the back of the town, which is laid out in chessboard fashion, are cisterns replenished from artesian wells, botanic gardens, a racecourse, canal, and the terminus of a railway which runs through the surrounding sugar plantations to the settlement of *Mahaica*, at the mouth of the river of like name. The line, which was opened in 1850, is

24 miles long, and does a considerable traffic in goods and passengers.

New Amsterdam, which retains its old Dutch name, but is also known as *Berbice*, from the river on which it stands, holds a position in the eastern districts corresponding to that of Georgetown in the centre. Like the capital it has also its citadel, *Fort York*, which, however,

GOVERNMENT AGENCY, NORTH-WESTERN DISTRICT.

stands on the opposite side of the estuary. In its numerous canals, intersecting each other in all directions, its quiet squares and quaint houses embowered in verdure, New Amsterdam still preserves the aspect of a mediæval Dutch town, despite the many later changes introduced to meet modern requirements.

Till the year 1831 Demerara and Berbice formed two separate governments, as under Dutch rule. But since then the colony is divided into four administrative

districts called counties—Berbice, Demerara, Essequibo, and North-West—under a single government centred at Georgetown. The machinery of administration is peculiar, partaking both of the old Romano-Dutch and of the British systems. Thus the governor is assisted for legislative purposes by a "Court of Policy," comprising seven ex-officio and eight elected members, and a "Combined Court," which, besides the above, includes six financial representatives returned by the registered voters. This court alone can levy taxes, and also prepares the yearly estimates of expenditure. The executive and administrative functions are vested in the Governor and an Executive Council, and the Romano-Dutch law, modified by Orders in Council, is still in force in civil procedure, while the criminal law is based on that of Great Britain.

Although the prospects of the colony are undoubtedly good, in recent years there has been little apparent progress in any branch of industry except gold mining and perhaps the lumber business. Thus the exports have actually declined from £2,000,000 in 1894 to £1,776,000 in 1899, while the revenue has fallen from £593,000 to £525,000 during the same period. There is also a public debt of £976,000, and not more than 80,000 acres have yet been brought under cultivation—70,000 sugar, the rest rice, vegetables, bananas, pine-apples, and other fruits. The bananas have an excellent flavour, and there is room here for great developments. But Demerara still trusts mainly to sugar, which is certainly unsurpassed for quality; while the cane, since the introduction of improved processes, yields a much larger percentage than formerly.

II.

Dutch Guiana

Notwithstanding the cession of the western districts to Great Britain in 1814, Dutch Guiana still forms a considerable estate, with an area of 46,000 square miles, or only about 4000 less than England. But the settled population (64,000 in 1897) is scarcely more than that of a third-rate English town, while the cultivated zone is confined to a narrow strip of the sea-board, which has a mean breadth of not more than 8 or 10 miles, and, like the mother country, lies so low that it is constantly threatened to be engulfed in the Atlantic waves. Such a fate overtook the settlement of Nickerie on the Corentyn estuary some years ago, and what was once a bright little town with streets, stores, churches, and public buildings, now lies some feet beneath the surface of the seething waters. "Meanwhile the breakers, not content with the mischief already done, continue ceaselessly tearing away the adjoining land, bit by bit. Right in front a large house, left an empty shell, without doors or window-frames, by its fugitive inhabitants, is on the point of sinking and disappearing among the waters that, unopposed, wash to and fro through the ground floor. Close by the victorious sea has invaded the gardens of the neighbouring dwellings. Farther on, a few isolated fragments of what was once a carefully constructed sea-dam rise like black specks among the yeasty waters, and the new earth-wall, built to protect what yet remains of Nickerie, has a desponding, make-shift look, as if aware that it will not have long to wait for its turn of demolition" (Palgrave, *op. cit.* p. 17).

Obviously Surinam, as the Dutch always call the portion of their ancient possessions which they still retain, is of far less value than the western section which they have ceded to England. Its permanent occupation dates from the Peace of Breda in 1669, when it was surrendered by England in exchange for their colony of New Netherlands (now New York) in North America. Since then it has been twice reoccupied by Great Britain, from 1799 to 1802, when it was restored at the Peace of Amiens, and from 1804 to 1816, when it was returned, in terms of the London Convention of 1814, with the other Dutch colonies except what is now British Guiana and the Cape of Good Hope.

For administrative purposes Surinam is divided into sixteen districts, under a Governer with executive functions, assisted by a Council, of which he is *ex officio* president, and the attorney-general vice-president, the three other members being nominated by the Crown. Representative powers are vested in the Colonial States, four members of which are annually chosen by the Governor, and the others by popular vote, in the proportion of one to two hundred electors.

Paramaribo, the capital and seat of government, is the centre of all the life and activity of the colony, and the only place worthy the name of town. It stands on the left (west) side of the Surinam estuary, and is laid out on the same rectangular plan as Georgetown. In 1898 it had a population of about 30,000, nearly half that of the entire colony, exclusive of the Bush Negroes. Despite an atmosphere like that of an orchid-house at Kew and of a Turkish bath combined, Paramaribo is essentially a Dutch town, an Amsterdam under another sky. "The broad, straight streets, flanked with spacious and lofty houses, shaded by carefully planted avenues,

adorned with public buildings that the Hague need not blush to own; the Governor's residence, a miniature palace for elegance of style and stately appearance; the spacious Masonic lodge; the seemly synagogues—Dutch the one, Portuguese the other; the decorous if somewhat heavy built churches, Reformed and Lutheran, Moravian and Catholic; the lofty town hall; the noble military hospital; the strong-built fort and barracks—all these are Dutch in appearance and character—all expressive of the Eleven Provinces, though chiefly of Zeeland and the steady purpose of her sons" (Palgrave, p. 38).

In the interior, generally beyond 5° 30′ S. lat., are the settlements of the Bush Negroes, extending from near the French frontier westwards to about the sources of the Coppename. There are three chief divisions—the *Aukans*, between the Maroni and Surinam rivers; the *Saramaccans*, between the Surinam and the Saramacca; and the *Matrocanes* or *Musingas*, thence to the Coppename. After a long series of servile wars, which lasted throughout the greater part of the eighteenth century (1715-1786), and caused an expenditure of £6,000,000 for war costs alone, besides greatly retarding the progress of Surinam, the independence of the runaways was fully recognised, and they still continue to govern themselves in their own way, maintaining peaceful trading relations with the settled inhabitants of the coast-lands, and largely identifying their own interests with those of the colony. On the other hand no attempts are made by the whites to encroach on their territory, which is secured to them by treaty rights, some dating as far back as 1761, when the first was concluded at Auka, a plantation on the banks of the Upper Surinam.

From this circumstance the Aukans take precedence of all the others, whose chief, the *Gramman* ("Grand

Man "), is acknowledged as the supreme head of all the Bush Negroes, at least in rank and dignity if not in power. In this respect custom is the absolute ruler, although in recent years they tolerate the presence of a "Post-houder," a Government agent, whose duties consist chiefly in settling the differences that arise between the villagers or their neighbours regarding rights of land or property. Most other cases, civil or criminal, are settled by the unwritten code of tribal usage, which is still somewhat barbarous and cruel in the punishments that it awards. Burning alive, however, which was formerly reserved for the sorcerers, is no longer heard of, the sorcerers themselves having apparently all died out. The widespread Obeah and Vaudoux practices have also fallen into abeyance, although the great bulk of the people are still pagans. Even the ancestral fetishes have mostly been discarded for the ceiba-tree, which is at present the chief object of worship. The indwelling spirit receives offerings of poultry, yams, libations, and the like, and is believed to be of an amiable disposition, unlike the spirit of the poison-tree, Hiari, who is still venerated by some through fear of his malevolent nature. The Bush Negroes, who occupy themselves chiefly with agriculture and the lumber industry, speak a strange jargon, in which the main elements are English, Dutch, Portuguese, and a few African words, all thrown together without any grammatical forms beyond the few terms indicative of number, sex, time, and such-like relations.

In their new homes these Africans show no signs of physical decay, but, on the contrary, "may rank among the best specimens of the Ethiopian type. The men are often six feet and more in height, with well-developed limbs and pleasing open countenance, and the women in every physical respect are, to say the least, worthy of

their mates. Ill-modelled trunks and disproportioned limbs are, in fact, as rare among them as they are common among some lighter-complexioned races. Their colour is, in general, very dark, and gives no token of the gradual tendency to assume a fairer tint that may be observed among the descendants of Negroes resident in more northerly latitudes. Their hair, too, is as curly as that of any Niam-niam, or Darfuri chief, or native of Senegal" (Palgrave, p. 169).

Unlike Demerara, the Dutch colony depends only to a limited extent on its sugar crop. Cacao, coffee, rice, maize, and bananas are also cultivated, and gold now also figures amongst the exports. In 1897 extensive mining concessions were granted to speculators, and although operations have hitherto been mainly confined to alluvial washings, the total output has exceeded £2,000,000 since the year 1876, when operations first began. Yet with all these resources the colony makes little progress, and would almost seem to have entered on a period of decline. It continues to be a burden on the metropolis to the extent of about £15,000 a year, and although the revenue rose from £150,000 in 1895 to £180,000 in 1899, the expenditure advanced from £160,000 to £200,000 in the same period. The exports also fell from £450,000 to £430,000, and the imports from £480,000 to £440,000 in 1893 and 1898 respectively. There are no railways, and scarcely any roads, communications being carried on almost entirely by water.

III.

French Guiana

Even less satisfactory is the economic condition of Cayenne, as the French commonly call their territ

The backward state of this region, despite its great natural resources, is usually attributed to the fact that Cayenne is little more than an overgrown convict station conveniently endowed with a dangerous climate. But the climate is not worse, perhaps better, than in most other parts of Guiana, while the colony, although long used as a place of banishment for troublesome political offenders, has been a penal settlement for habitual criminals ("recidivists") and convicts sentenced to more than eight years' hard labour only since 1852. The explanation lies rather in the reluctance of French emigrants to seek new homes in a land which has always had a bad name, and is under a strictly military administration.

As matters stand, with an area rather larger than that of Surinam (46,800 square miles before the award), Cayenne has considerably less than half the population of that colony (30,000), while less than 9000 acres are under cultivation. The chief crops are rice, maize, manioc, cocoa, coffee, sugar, indigo, and tobacco. But at present the most important industry is gold-mining, which has been carried on with some success since the year 1896, and now supplies by far the largest item of the colonial exports. Excluding the precious metal, these fell from £170,000 in 1889 to £140,000 in 1894, but again rose to £280,000 in 1898 under exceptionally favourable conditions. The imports also show considerable fluctuations, having advanced from £360,000 in 1889 to £400,000 in 1893, and again declined to £370,000 in 1897. In 1899 the revenue and expenditure were supposed to balance at £120,000; but in that year the contributions from the national treasury exceeded £270,000, of which sum £220,000 went to the maintenance of the penal establishment.

Thus, after an occupation of three centuries (1604), the colony, if it can be regarded as such, still continues to be a heavy burden on the mother country. Since the first settlement Cayenne has changed hands several times. It was seized by the English in 1654, and soon after by the Dutch, who were expelled by the French in 1677. It was again taken by the English in 1809, but finally restored to France in 1814. The colony is administered by a Governor, assisted by a Council-general of sixteen members, and is represented in the French Chambers by one deputy. In 1897 a convention was signed at Rio Janeiro submitting the disputed territory to the decision of the Swiss Government. The question turned mainly on the identification of the river *Vincent Pinçon*, which formed the frontier between the French and Portuguese possessions in colonial times, and was held to be the Arawari by France, and the Oyapok by Brazil, heir to the rights of Portugal. This view was taken by the arbitrators, who on 1st December 1900 awarded to Brazil nearly the whole of the contested territory—147,000 square miles—leaving to France only about 3000 square miles on the northern slope of the Tumuc-humac range.

Cayenne, the capital, the only seaport, and almost the only town in the colony, stands at the north end of the island of like name, where the first settlement was founded by La Ravardière in 1604. It is laid out in the usual American chess-board fashion, and in 1900 had a population of 12,000, or more than one-third of all the inhabitants of the colony. Being well exposed to the marine breezes it is naturally a healthy place, and the reputation it has earned for insalubrity is mainly due to the miasma arising from the stagnant waters of the neighbouring canals. The harbour, which is accessible

to vessels drawing 14 feet, is somewhat exposed to the north winds, and the shipping has occasionally been wrecked on the neighbouring rocks.

Recent visitors give a somewhat gloomy picture of the capital, which generally reflects the depressed condition of the whole colony. A few fine avenues adorned with palms are a poor set-off to the dearness of provisions and the total lack of vegetables. The meat is bad, writes M. Werschuur, and the beef imported from the Orinoco requires a strong dentition. There are no cafés, no public resorts, no conveyances, tramways, omnibuses, electricity, or gas, but a surprising number of chemists' shops, which flourish on the insanitary conditions of the place. On the other hand, the environs are delightful, and charm the eye with their wealth of tropical vegetation. Yet even here symptoms of decay meet the eye at every turn. Scarcely a vestige remains of the old plantations, which since the emancipation of the slaves have reverted to a state of nature. Many of the more recent coffee and cacao grounds have also been abandoned for the superior attractions of the lately discovered goldfields.

APPENDIX

TABULATED SURVEY OF THE WEST INDIAN ISLANDS

I. THE GREAT ANTILLES

NAME, POPULATION, AND EXTENT.	HISTORY.	CHIEF TOWNS.	PRODUCTS AND INDUSTRIES.
CUBA. Population, 1,632,000 (1894). Area, 45,000 square miles.	October 28, 1492: Discovered by Columbus. 1511: Settled by the Spaniards. Divided into three departments, a western, a central, and an eastern. Sanguinary insurrection, 1868-78; general revolt 1895-98; intervention of America, April 1898; reduction of Santiago and destruction of Spanish fleet, followed by cession of Cuba to United States (Treaty of Paris, December 11, 1898).	Havana, on the N. coast, 200,000 inhabitants. The seat of government. Matanzas, 27,000 Cardenas, 24,000 } on the N. coast. Holguin, 35,000 Puerto Principe, 46,000 Bayamo, 18,000 } in the interior Espiritu Santo, 32,000 Santiago de Cuba, 71,000 Trinidad, 26,000 } on the S. coast. Cienfuegos, 27,000	Sugar, molasses, rum, tobacco, cocoa, cotton, rice, arrow-root, indigo, bananas, potatoes, coffee, fruits, timber, coal Plantations, cattle and swine breeding.
HISPANIOLA (HAYTI and S. DOMINGO). Population of Hayti, 960,000; of S. Domingo, 610,000. Area of Hayti, 10,204 sq. miles; S. Domingo, 18,045 sq. miles; total 28,249.	December 6, 1492: Discovered by Columbus; originally settled by Spain. 1697: Hayti finally ceded to France. 1803: The whites expelled, and an empire set up, from which San Domingo revolted and set up a republic in 1808. In 1820 both states were reunited as a republic, and again separated in 1843. At present the island is divided into two independent	Port-au Prince, capital of Hayti, 50,000; cap. Haiti, 30,000. S. Domingo, capital of S. Domingo, 14,000. Santiago, 13,000 } in the interior Concepcion, 10,000 } of S. Domingo.	Sugar, coffee, tobacco, cocoa, rum, cotton. Mahogany, logwood, guano, gold, silver, tin, coal, iron. Plantations. Trade chiefly with Great Britain, United States, France, and Germany.

1214 sq. miles.	Cuba.		
JAMAICA. Population, 639,490 (1891). Area, 4200 sq. miles.	1494: Discovered by Columbus. 1510: Settled by the Spaniards. 1655: Taken by the English, in whose hands it has since remained. Is divided into the counties of Middlesex, Cornwall, and Surrey.	Kingston, seat of government, and the chief seaport, 46,000. Montego, 5000. Spanish Town, 5000. Savanna-la-Mar, 3000.	Sugar, coffee, rice, rum, tobacco, cocoa, arrowroot, spices, cedar, cinchona, wood. Lead, copper, silver, zinc, antimony, iron, manganese.
PUERTO RICO. Population, 800,000 (1894). Area, 3668 sq. miles.	1493: Discovered by Columbus. 1509: Settled by the Spaniards, with the neighbouring little islands divided into eight departments. Ceded to United States (Treaty of Paris, December 11, 1898).	San Juan de Puerto Rico, the capital, 19,000. S. German, 10,000.	Sugar, coffee, tobacco, cotton, timber, hides, rum, cattle, salt, copper, iron, lead, gold, coal. Plantations, mining.

II. THE LESSER ANTILLES

NAME, POPULATION, AND EXTENT.	HISTORY.	CHIEF TOWNS.	PRODUCTS AND INDUSTRIES.
ANEGADA. Population, 350. Area, 20 sq. miles.	1494: Discovered by Columbus. Till 1666 a buccaneer station, when it was settled by the English. One of the Virgin Group.	...	Sea salt, fisheries.
ANTIGUA. Population, 37,000 (1891). Area, 108 sq. miles.	1493: Discovered by Columbus. Since 1668 an English colony.	S. John's, 9740; English Harbour; Falmouth; Parham.	

II. THE LESSER ANTILLES—*Continued*

NAME, POPULATION, AND EXTENT.	HISTORY.	CHIEF TOWNS.	PRODUCTS AND INDUSTRIES.
ARUBA or ORUBA. Population, 4525. Area, 165 sq. miles.	1527: Discovered. A Dutch settlement.	Orangestad.	Timber and cochineal.
BARBADOS. Population, 190,000 (1898). Area, 166 sq. miles.	1625: Colonised by Dean. Since 1605 in the hands of the English.	Bridgetown, 21,000. Holetown and Speightstown.	Sugar, arrowroot, aloes, cotton. Plantations.
BARBUDA. Population, 640. Area, 62 sq. miles.	1493: Discovered by Columbus. 1636: Taken by the English. Attached to the government of Antigua.	...	Wood, cattle, horses, potatoes, and fruits.
BIRDS' ISLANDS (Aves). Uninhabited.	Formerly Dutch. Since 1856 belong to Venezuela.	...	Guano.
BUEN AYRE. Population, 4400. Area, 330 sq. miles.	A Dutch settlement.	El Puerto.	Salt, cochineal, timber.
CURACAO. Population, 28,000. Area, 550 sq. miles.	1627: Taken by the Spaniards. 1634: Conquered by the Dutch. 1798-1801: Held by the English. 1814: Ceded to Holland.	Willemstad, 10,000. Santa Cruz.	Sugar, cotton, tobacco, manioc, maize, bananas, cocoa; cattle, horses; liqueurs, brandy.
DOMINICA. Population, 26,840 (1897). Area, 290 sq. miles.	1493: Discovered by Columbus. In 17th century occupied by the French. 1756: Taken by the English; and 1783, finally ceded to them.	Roseau, 4000. Charlottetown, S. Joseph. Portsmouth, S. Andrews.	Rum, sugar, cocoa, coffee. Plantations and industries.

GRENADA. Population (1897), 61,000. Area, 133 sq. miles.	1498: Discovered by Columbus. 1650: Colonised by the French. Since 1763 an English colony.	Georgetown, 2000. Charlotte, Grenville.	Sugar, coffee, rum, cocoa, cotton. Plantations and industries.
THE GRENADINES. Population, 6000. Area, 86 sq. miles.	1498: Discovered by Columbus. Since 1763 an English possession.	...	Wood, sugar, cotton, corn. Plantations, fisheries.
GUADELOUPE. Population, 167,000 (1899). Area, with the adjoining islets, 1800 sq. miles.	1493: Discovered by Columbus. 1635: Seized by French buccaneers. 1759-63: In the hands of the English, who again occupied it in 1813 and 1815. Since 1816 a French colony.	Basse Terre, 7760. Capesterre, 7645. Pointe-à-Pitre, 17,240. St. Anne, 7000. Le Moule, 9000. Port Louis, 4200.	Sugar, coffee, rum, cocoa, cotton, dyewoods, spices, fruits, cattle. Plantations and industries. Cattle-breeding, shipping.
MARGARITA. Population, 40,000. Area, 1145 sq. miles.	1498: Discovered by Columbus. Passed from Spain to Venezuela.	Asuncion, 3000. Pampatar. Sabana Grande.	Sugar, coffee, cocoa, bananas, maize. Plantations, pearl fisheries, shipping.
MARTINIQUE. Population, 188,000 (1899). Area, 380 sq. miles.	1493: Discovered by Columbus. 1635: Colonised by the French. 1758: The native Caribs were removed to S. Domingo and S. Vincent. From 1794 to 1802, and again, 1809-15, in the hands of the English. Since then French.	Port de France, 17,000. Saint Pierre, 26,000. Le Havre de la Trinité, 7000. Le Havre du Robert, 6000.	Sugar, rum, coffee, cocoa, cotton, cassia, and dyewoods. Plantations and industries.
MONTSERRAT. Population, 11,760. Area, 122 sq. miles.	1493: Discovered by Columbus. 1632: An Irish colony. 1712-46: French. Since then English, under the government of Antigua.	Plymouth, 1400.	Sugar, maize, cotton, coffee, indigo. Plantations.
NEVIS. Population, 130,000 (1891). Area, 145 sq. miles.	1628: Settled by the English; for a time in the hands of the French. Since 1783 English.	Charlestown, 840.	Sugar. Plantations.
SABA. Population, 2000 (1891). Area, 13 sq. miles.	A Dutch possession; but the inhabitants speak English.	Le Fond.	Vegetables, sweet potatoes, and other garden produce; boat building.

II. THE LESSER ANTILLES—*Continued.*

NAME, POPULATION, AND EXTENT.	HISTORY.	CHIEF TOWNS.	PRODUCTS AND INDUSTRIES.
ST. BARTHOLOMEW. Population, 2650. Area, 21 sq. miles.	1648: Colonised by the French; after many vicissitudes ceded to Sweden in 1785.	Gustavia, 900.	Vegetables; fisheries.
ST. CHRISTOPHER (St. Kitts). Population, 30,876 (1891). Area, 168 sq. miles.	1623 and 1637, in the hands of English and French buccaneers. Till 1713 jointly occupied by English and French. Since then English alone.	Basse Terre, 9000. Old Road.	Sugar, rum, coffee, arrowroot, sweet potatoes, indigo, salt. Plantations.
ST. EUSTACHE. Population, 1600 (1898). Area, 20 sq. miles.	1635: Taken by the Dutch, and after changing hands many times finally ceded to them. The inhabitants speak English.	Orangetown.	Sugar, rum, sweet potatoes. Plantations; shipping.
ST. JOHN. Population, 950 (1898). Area, 21 square miles.	1494: Discovered by Columbus. Since 1717 Danish.	...	Sugar; shipping.
ST. LUCIA. Population, 47,332 (1897). Area, 250 sq. miles.	1498: Discovered by Columbus. 1640: Taken by the French. 1713: Declared neutral territory. 1739-62: Jointly held by English and French. 1765: French alone. 1814: Ceded to England.	Port Castries, 8000; Old Fort; La Soufrière, 2000.	Cocoa, coffee, sugar, rum, some cotton, mahogany and other timbers, fruits. Plantations; shipping.
ST. MARTIN. Population, 3720 (1898). Area, 98 sq. miles.	Since 1638 jointly held by French and Dutch, the former in the north-west, the latter elsewhere.	Marigot (French). Phillipsbourg (Dutch).	Cotton, sugar, salt. Plantations; shipping.

ST. THOMAS. Population, 32,786 (1898). Area, 23 square miles.	1493: Discovered by Columbus. 1671: Settled by a Danish trading company. Since 1755, with a short interruption, in the hands of the Danes.	Port St. Thomas, 13,000.	Sugar, rum; shipping.
ST. VINCENT. Population, 41,000 (1891). Area, 130 sq. miles.	1498: Discovered by Columbus. With the exception of the years 1779-83, an English possession.	Kingstown, 4550. Princestown, Georgetown. Château-Belair.	Sugar, rum, cocoa, cotton, flour, arrowroot. Plantations, fisheries.
SANTA CRUZ. Population, 18,430 (1898). Area, 74 sq. miles.	1498: Discovered by Columbus. Since 1733 Danish.	Christianstead, 6000. Frederichstead, 3000.	Sugar and other plantations. Shipping.
SNAKES' ISLAND. Population, 3720 (1891). Area, 38 sq. miles.	Since 1650 in the hands of the English.	...	Salt, cattle, ponies, garden produce. Agriculture.
TOBAGO. Population, 21,000 (1898). Area, 120 square miles.	1498: Discovered by Columbus. 1632: Colonised by the Dutch, later on by Courlanders. 1677 to 1763: Held by the French. Since 1814 an English possession.	Scarborough, 1400. Georgetown, Milfordtown. Plymouth.	Sugar, rum. Plantations.
TORTOLA. Population, 5000 (1898). Area, 24 square miles.	1493: Discovered by Columbus. First settled by the Dutch. Since 1666 English.	Road Harbour.	Sugar, rum, coffee. Plantations; shipping.
TRINIDAD. Population, 260,000 (1898). Area, 1755 sq. miles.	1498: Discovered by Columbus. 1545: Occupied by the Spaniards. Since 1797 an English colony.	Port of Spain or Spanish Town, 34,000; Anna Parima; S. Fernando; S. José de Oruna.	Sugar, coffee, cocoa, cotton, indigo, tobacco, asphalt. Plantations; shipping.
VIRGIN GORDA. Population, 768. Area, 10 square miles.	1494: Discovered by Columbus. Since 1666 in the hands of the English.	Spanish Town.	Cattle-breeding; charcoal.
VIRGIN ISLANDS. Population, 52,000. Area, 694 sq. miles.	1493: Discovered by Columbus. Belong partly to England and Denmark.	...	Sugar, rum, spices, cotton, tobacco, indigo, salt. Plantations; sheep, goats,

III. THE LUCAYAS, OR BAHAMA ISLANDS

The first islands discovered by Columbus on his first voyage in 1492; were colonised by the English in 1629, and held by the Spaniards from 1641 to 1697, when they were again seized by the English. Subsequently occupied by the buccaneers, order was restored in 1718. In 1781 ceded to Spain, they were temporarily held by the Americans in 1782, but passed next year finally into the hands of the English.

They consist of 12 large islands, 661 islets, or cays as they are called, and 2387 banks and rocks above the surface of the water. They all rise at the edge of large coral banks, and are of coral formation, with a mean elevation of 100 feet above the sea-level, some, however, rising to a height of 400. The land is mostly rocky and sandy, adapted only for the growth of timber, maize, and pulse. Springs are rare; but on several of them are large salt lakes, rising and falling with the tides. Climate warm and healthy; hurricanes very frequent; and the navigation extremely dangerous.

Total area, 5600 English square miles. Population (1891), 47,564, of whom about 12,000 whites, the rest coloured; estimated population (1899) 59,000.

Products—Salt; sub-tropical fruits, especially pine-apples and oranges; cotton, maize, sweet potatoes, manioc, melons, arrowroot, dyewoods; timber suited for shipbuilding, carpenter and joiners' work; sponges, turtles. Exports in 1898, £175,000.

The largest and most important of the Bahamas, taking them in their order from north-west to south-east, are—Bahama, Great Abaco, Eleuthera, New Providence, Andros, Cat Island, Watlings, Yuma, Acklin, Mariguana, The Caicos (North, Grand, and East), Inagua (Great and Little), Turk Islands. Either Watling Island, or the neighbouring Samana, about the centre of the archipelago, is the true San Salvador of Columbus, that is, the first land in the New World discovered by him on October 12th 1492. Cat Island, formerly wrongly supposed to be the spot where Columbus first landed, is now, consequently, sometimes called False San Salvador.

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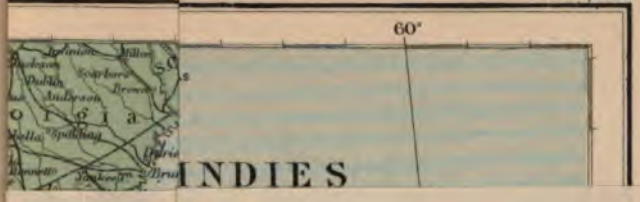

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